# 0F1F2F3F4FDeveloping and Implementing a “Hunger-Free Hospital” Model

By
Cynthia Chen

A Community Based Master Project presented to the faculty of Drexel University School of Public Health in partial fulfillment of the Requirement for the Degree of Master of Public Health.

**ACKNOWLEDGEMENTS**

Many thanks to all the people and organizations that have made this project possible:

Mary Hortsmann, Deputy Director, Office of Policy Planning and Coordination, Preceptor
Mariana Chilton, Ph.D., MPH, Director, Center for Hunger-Free Communities, Advisor

Without all of your continued support, wisdom, inspiration and guidance, I never would have attained the wonderful experiences I have through this project. I feel honored and privileged to have been able to work with everyone involved. I truly could not have hoped for better mentors, advisors and colleagues with whom to collaborate, advocate, and learn.

## TABLE OF CONTENTS



## APPENDICES

## LIST OF ILLUSTRATIONS

## ABSTRACT

Developing and Implementing a "Hunger-Free Hospitals" Model

Cynthia Chen, MPH Candidate, Drexel University
Mary Horstmann, Deputy Director, Office of Policy Planning and Coordination (Preceptor)
Mariana Chilton, Ph.D., MPH, Director, Center for Hunger-Free Communities (Advisor)

In 2010, approximately 14.5 % of households in the US were food insecure sometime during the year (Nord, Coleman-Jensen, Andrews, & Carlson, 2010). Children living in households that are food insecure are particularly vulnerable to developmental delays, physical illness and socio-emotional stress. Even marginal food insecurity can affect a young child's development, learning potential and later life success. The "hunger-free hospital" is one way of addressing food insecurity and its associated problems. This new model was developed to address high levels of food insecurity among vulnerable families in the US. This model stresses the importance of food insecurity surveillance, and access to healthy food as a central resource in order to prevent illness and maintain health. Consequently, hospitals are considered a hub for tracing, treating and preventing illnesses associated with food insecurity. A medical institution may fulfill a number of criteria to become committed or designated as a "hunger-free hospital." The basis of the model is to screen patients for food insecurity, and then connect positively screened patients with short and long term nutrition assistance. Furthermore, the information obtained through these food insecurity screenings may be recorded in the patient's Electronic Medical Record for future reference and used to more comprehensively treat food insecure patients. Aggregate data may also be relayed to the city government to allow more accurate tracking and record keeping of food insecurity rates at a city-wide, and potentially state or nation-wide level.

Implementation of this model relies on building relationships with key stakeholders, such as hospitals, government agencies, food providers, food pantries and city administrators. The contribution of hospitals interested in the "hunger-free hospital" project is dependent on their willingness to address and ability to achieve outlined objectives in the model. Each hospital, city and state has their own culture, beliefs and best interests in terms of addressing food insecurity in their own areas. Therefore, adjustments for the best-fit model are necessary for successful implementation. Reaching more medical institutions and branching out to nearby regions is recommended for the continual expansion of this project. The ongoing dissemination of the "hunger-free hospital" model may be used as an intervention for addressing food insecurity or used as a significant part of a larger plan for providing surveillance and alleviating food insecurity in the US.

## INTRODUCTION AND STATEMENT OF PROBLEM

### *Overall Significance of the Study*

The overall goal of this project is to develop and implement a model of "hunger-free hospitals" that will reduce the rate of food insecurity in Philadelphia. In addition to providing a mechanism for strategic surveillance, and treatment of food insecurity, it will also address the rising healthcare costs due to hunger-associated illnesses in the United States.

### *Statement of the Problem*

The problem being addressed by this project is the high level of food insecurity in families. Household food insecurity, especially among children, drastically affects the physical, socio-emotional and mental developmental progression of children's minds and bodies. Inadequate or inconsistent access to nutritious, healthy foods, even for a short period of time, may cause negative permanent, life-long effects (Chilton, Chyatte, & Breaux, 2007; J. T. Cook & Frank, 2008; Rose-Jacobs et al., 2008). Therefore, it is imperative that children are provided with enough food and proper resources to grow.

Infants and toddlers are particularly vulnerable because the first three years of life is such a critical developmental period. This time lays the foundation for future growth, learning, socio-emotional management and progression in later life. Food insecurity during these early years may hinder the child's later academic achievement, work force participation, health and general well-being (J. T. Cook et al., 2004); Jeng, March, Cook, & Ettinger de Cuba, 2009). Analyses using the U.S. Household Food Security Scale showed that children who were food insecure and under 36 months of age had two times the odds of being "fair or poor" health when compared to children who did not suffer from food

insecurity (J. T. Cook et al., 2004). Research has shown that children starting life with these disadvantages, are more likely to be at a developmental risk and remain disadvantaged later on (Jeng, March, Cook, & Ettinger de Cuba, 2009; Rose-Jacobs et al., 2008).

According to a recent study done by Food Resource and Action Center (FRAC), the 1st Congressional district in the City of Philadelphia has a food hardship rate of 31.2%, which is much higher than that of the national average and ranks the 4th highest in food hardships among all cities in the United States (Figure 1) (Food Research and Action Council, 2010). The United States Department of Agriculture (USDA) estimates the prevalence rate of food insecurity in Pennsylvania to be 12.5% in 2010 (USDA, 2011). More recent data suggests that the household food insecurity rate in Philadelphia for children under four years of age, is 16.9% (Children's HealthWatch, 2011). This is much higher than the national household food insecurity rate of 3.1% with children under six years of age (USDA, 2011). Therefore, the Office of the Mayor has an invested interest in addressing the high levels of food insecurity in Philadelphia through the "hunger-free hospitals" model.

## BACKGROUND AND SIGNIFICANCE

### *Critical Review*

Food insecurity is defined as a limited or uncertain access to attaining nutritious, safe foods (Nord et al., 2010). Poverty is one of the main reasons behind hunger and food insecurity in families (Tapper-Gardzina & Cotugna, 2003). Children who are food insecure are at an even greater disadvantage because lack of nutritious foods can be detrimental to their development. In the United States, there are around 17 million children who are considered food insecure. In 2009, the USDA reported a national level household food0

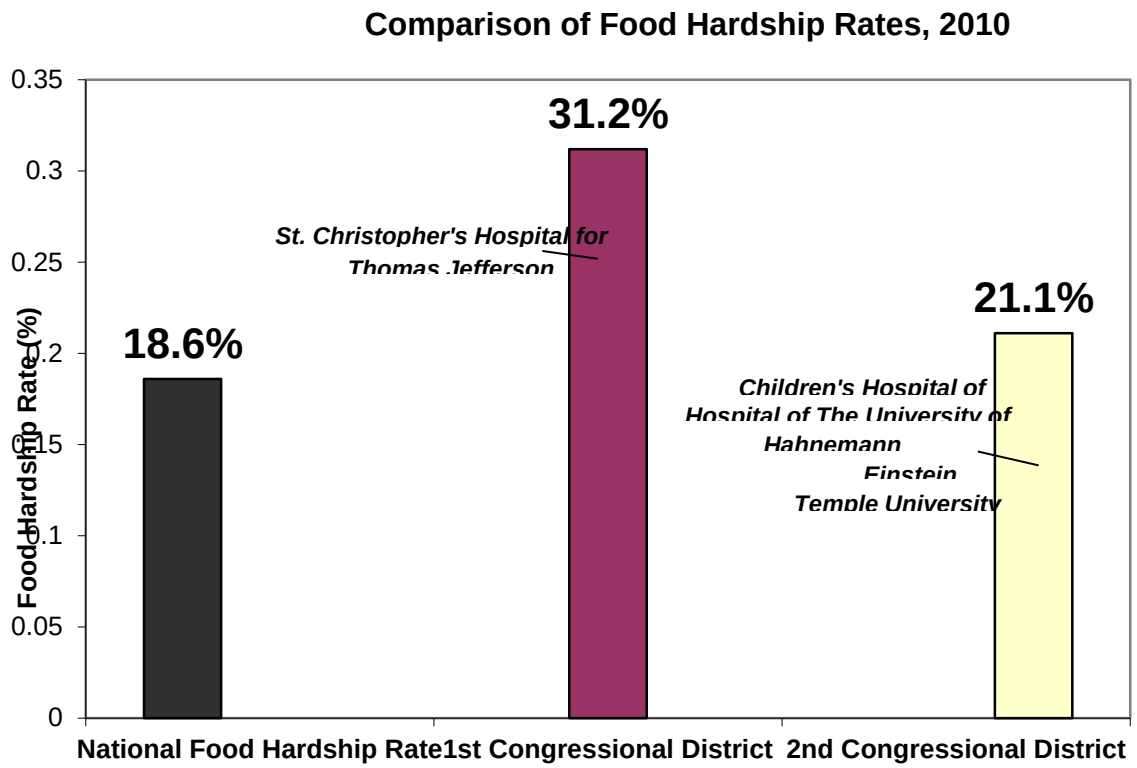



*Figure 1. Comparison of Food Hardships Rates, 2010.* This graph depicts the national food hardship rate with that of the 1st and 2nd Congressional districts in Pennsylvania. The food hardship rates for both districts (31.2% and 21.1% respectively) are much higher than that of the national average (18.6%)(Food Research and Action Council, 2010). Hospitals in the respective Congressional districts are shown to provide perspective on the populations that are receiving care.

insecurity of 14.7% (Nord et al., 2010). This number has remained relatively unchanged from 2008 when measuring food insecurity rates over the entire year. However, the prevalence of food insecurity at each level of severity is at the highest ever recorded (Nord et al., 2010). The food insecurity prevalence is substantially higher among African Americans and Hispanics, households with children headed by single parents, and families that live near or below the federal poverty line (Casey et al., 2005; Nord et al., 2010). Studies have shown that households who are food insecure also have difficulties with paying rent, utilities, and other daily expenses (E. March, Cook, Ettinger de Cuba, Gayman,

& Frank, 2010). These households that suffer from hunger and poverty have direct effects on the children. Thus, food insecurity among children is a major public health, medical and social issue that must be addressed.

Many families who are food insecure may also suffer from other hardships as well. A study by the Children's Sentinel Nutrition Assessment Project (now Children's HealthWatch) found that in their sample size, only 16% of families received Low Income Home Energy Assistance Program (LIHEAP) (Frank et al., 2006). This is similar to the national estimate that LIHEAP benefits reach 17% of all US households (Frank et al., 2006). However, Children's HealthWatch found that 56% of families were housing insecure in Philadelphia and only 11.2% receive of these families receive housing assistance (Weiss, 2012). Households that received LIHEAP were also more likely to receive other types of federal assistance, such as SNAP, WIC, TANF and SSI, and live in subsidized housing (Frank et al., 2006). Families receiving these types of assistance have lower associations with undernutrition, overweight and hospitalizations (Frank et al., 2006). However, the benefits from receiving LIHEAP are eliminated when funding for this program runs out in the winter. According to the US Census, this translates to over 19 million families that are forced to choose between providing heat or food for their children. This creates additional hardships around food, housing and energy, which is a strong predictor of children's health and development (Frank et al., 2010). Increasing levels of household difficulties or struggles may have significantly greater impacts on children's wellbeing. Therefore, considerations around the cumulative hardships faced by families suffering from food insecurity may be prudent to fully understanding the issue.

Much of the research around childhood food insecurity is undeniably similar:

hunger in children is linked with adverse physical, socio-emotional and mental problems. Children who suffered from food insecurity at an early age were more likely to be malnourished and developmentally at-risk (Kursmark & Weitzman, 2009). Studies have indicated that early childhood malnutrition may be linked to low IQ in middle childhood and behavioral problems in adolescence (Belsky, Moffitt, Arseneault, Melchior, & Caspi, 2010). Childhood malnutrition may also lead to irritability, concentration problems, increased school absences, aggression, lower test scores and poorer academic achievement in later life (Perry, 2007; Tapper-Gardzina & Cotugna, 2003). Such associations may be the result of impaired cognitive, behavioral and emotional function and regulation in the home and school environment.

Research has also shown that food insecure children are more likely to have decreased access to healthcare, postponed healthcare, and increased hospitalizations (JT Cook, Frank, Suzette, Nicole, & et al., 2006; Kursmark & Weitzman, 2009). According to the National Health and Nutrition Examination Survey III (NHANES III), which incorporated questions from the Children's Food Security Scale, children from food insecure households were more likely to have poor or fair health, stomach aches, iron deficiency anemia, headaches and colds (Casey et al., 2005; Tapper-Gardzina & Cotugna, 2003). Even children who live in marginally food insecure households may suffer negative health effects. Children under three years of age who suffered from low levels of food insecurity are more likely to be in fair/poor health, and be at risk for developmental delays (J. Cook, March, & Ettinger de Cuba, 2009).

Food insecure children generally score lower on physical and psychosocial functioning on the child health-related quality of life (CHRQOL) assessment (Casey et al.,

2005). Analysis of the NHANES III shows a strong association between food insufficiency, and depressive disorder and suicidal symptoms in adolescents living in the United States (Alaimo, Olson, & Frongillo, 2002). In this study, the term 'food insufficiency' was determined if the family sometimes or often did not have enough to eat. Food insufficient adolescents were significantly more likely to have had dysthymia, thoughts of death, desire to die, and have attempted suicide (Alaimo et al., 2002). This strongly indicates that food insecurity should be considered a risk factor for children's and adolescent's health and development.

Another factor that affects children's development is the experiences they receive in food insecure households. Children living in marginally food insecure homes are more likely to have caregivers who have fair/poor health and have symptoms of depression (J. Cook et al., 2009). Among low-income families, food insecurity often co-occurred with maternal depression, psychosis spectrum disorder, and domestic violence (Melchior et al., 2009). This suggests that women's mental health contributes to the food insecurity status of a family. Furthermore, children had cognitive, emotional and physical awareness of food insecurity and household occurrences (Fram, 2011). Children took responsibility for managing food resources, initiation of their own strategies, and generating resources for the family. Children's experiences of food insecure homes were often based on quality of the child/parent interaction, parent affect behaviors, and types and quantities of foods they ate (Fram, 2011). Research also shows that children's experiences in food insecure homes were very different than previously thought by their parents. This insight provides valuable lessons from which to learn when providing interventions and addressing food insecurity in families.

Many researchers have theorized various reasons behind the connections between food insecurity in children and its many detrimental associations. The most obvious link is the association between lack of food and nutrition in the early years and developmental delays. The first three years of life are most critical to a children's growth because they are marked by explosions of physical and mental development. Most synaptic and neural connections in the brain occur before children turn six years old. After this time, pruning and myelination occurs, which causes a shift in learning to become more similar to the adult brain (Shonkoff, Boyce, & McEwen, 2009). Disruptions, such as malnutrition, trauma or stress, to this natural process can affect the child's physical, socio-emotional and psychological well-being (Chilton et al., 2007). Therefore, adequate nutritional foods must be guaranteed in order to foster and promote the child's rapid growth during this period of time.

Another subtle link between food insecurity and its negative associations may be found in an individual's lifetime exposure to violence, trauma, and sexual assault. Studies have shown that homeless, low-income mother's who experienced sexual assault in childhood were more likely to have household food insecurity than women who had not been abused (Wehler et al., 2004). Furthermore, children who suffer from toxic stress, such as neglect and abuse, are more likely to develop diseases, such as diabetes, cardiovascular disease, depression, anxiety, and early mortality, as an adult (Felitti et al., 1998). From this, it may be deduced that food insecurity is associated with several elements of poverty and negative experiences. Therefore, food insecurity is a good marker on which to focus to also address other socio-economic and healthcare issues. Food insecurity is also closely connected with an individual's lifetime experiences and should be

considered when devising solutions and wrap around approaches.

*Evolution of Food Insecurity*

The concept of food insecurity is a relatively new term, recently developed within the last twenty-five years. In 1984, the US Report of the President's Task Force on Food Assistance explored poverty-related hunger and concluded that food security embodies much more social and political integration than previously thought (Kursmark & Weitzman, 2009). Food insecurity is not just about avoiding hunger, but also about household conditions, mental health and access to support. The term food insecurity was not used in the report, even though its condition was described as such. Official assessments of food insecurity in the United States did not begin until the 1990s, when the United States Department of Agriculture (USDA) developed a standardized 18-question United States Household Food Security Scale (Kursmark & Weitzman, 2009). This assessment was created from ethnographic and cognitive research over the previous 10 years. Initially, households were classified as food secure, food insecure without hunger, food insecure with moderate hunger, or food insecure with severe hunger (Kursmark & Weitzman, 2009). Between 2003-2006, an expert panel organized by the Committee on National Statistics reviewed food security measurement methods. The term "hunger" was removed from the classification because they felt that hunger resulted from a consequence of food insecurity due to prolonged lack of food that results in discomfort, illness, weakness, or pain, which could not be assessed through the questions on the US Household Food Security Scale (Nord & Hopwood, 2007). Consequently, new terms were developed resulting in the current classifications of food secure, low food security, or very low food security.

Based on the abundance of research documenting the consequences of childhood hunger, the USDA recognized the importance of distinguishing childhood food insecurity on the United States Household Food Security Scale. Consequently, the Children's Food Security Scale was created, which consists of eight questions referring to children's level of hunger (Kursmark & Weitzman, 2009). The Children's Food Security Scale was then added to the US Household Food Security Scale. Specifying children's food insecurity is extremely important because it causes much more drastic, detrimental and long-lasting consequences at a young age. Therefore, national childhood food insecurity levels should be of particular importance in order to calculate the amount of federal assistance needed by households with children, and alleviate the negative associations attributed to childhood food insecurity.

*Solutions to Food Insecurity*

Large-scale public programs can decrease or mitigate the impacts that cumulative hardships have on children (Frank et al., 2010). For example, federal assistance programs, such as SNAP and WIC, enhance the health and growth of young children (Black et al., 2004; J. T. Cook et al., 2006). Children's HealthWatch has shown that SNAP can significantly decrease families' and children's food insecurity, and that children in families receiving SNAP were less likely to be underweight or at risk for developmental delays (Ettinger de Cuba, 2012). When SNAP benefits were increased in 2009, children in families receiving SNAP were significantly more likely to be classified as "well" compared with children whose families were eligible but did not receive SNAP (Ettinger de Cuba, 2012). Children under three years of age who received WIC were more likely to be in good health and not underweight compared with those who are eligible but not receiving WIC (Gayman, 2010).

Consequently, there is strong evidence that supports the benefits that SNAP and WIC provide young children who are food insecure.

Food stamp and WIC participation is also associated with positive effects on children's education and academic achievement. Starting food stamp participation for children between Kindergarten and third grade had an association with a 3-point greater improvement in reading and mathematic scores compared with stopping food stamp participation during this time (Frongillo, Jyoti, & Jones, 2006). Furthermore, children who are receiving WIC are considered at reduced risk for developmental delays, which helps them to be ready to learn when they enter school (Gayman, 2010). Therefore, WIC and SNAP are important for early learning and later academic success.

Children in families who receive housing subsidies, such as LIHEAP, are also associated with having many positive health benefits. Studies show that young children in housing insecure families are more likely to be food insecure, and at increased risk of poor health and developmental delays (Weiss, 2012). However, children living in subsidized housing or with families who received LIHEAP were more likely to be food secure and classified as "well" as an indicator of health (E. March, Ettinger de Cuba, S, Gayman, A, Cook, J, Frank, DA, Meyers, A, Coleman, S & Yang, A, 2009). These children were also 52% less likely to be seriously underweight than food insecure children on the waitlist for subsidized housing (E. March, Ettinger de Cuba, S, Gayman, A, Cook, J, Frank, DA, Meyers, A, Coleman, S & Yang, A, 2009). Therefore, stable, affordable housing improves the health of children and help them reach their full potentials.

However, federal assistance programs, by themselves, only alleviate part of the problems associated with food insecurity. Families that received SNAP were significantly

less likely to have had to make trade-offs between paying for healthcare costs and paying for other basic needs, like food, housing, heating and electricity (Ettinger de Cuba, 2012). However, families receiving food stamps still had greater associations of being food insecure and having fair to poor health compared to families who are not food insecure at all (J. T. Cook et al., 2004). Clearly, a more comprehensive or wrap around approach is necessary to eliminate food insecurity, and other cumulative hardships families may be facing.

The subtle connections between childhood food insecurity and its observed outcomes should be considered when finding a long-term, sustainable solution to this problem. The relationship is multidimensional and encompasses a broad scope of disciplines including socio-economic structures, political nuances, social services and developmental psychology (Chilton et al., 2007). Public policies that focus on ameliorating household food insecurity should address all these issues. A wrap around approach may not only improve early child development, school readiness and overall outcome in life, but also increase the likelihood that the later adult will no longer be food insecure. An important point to note is that food insecure children usually indicate hunger in parents and siblings as well. Thus, wrap around approaches and solutions for the whole family must be considered and properly evaluated.

The American Dietetic Association suggests sustainable development of solutions to food insecurity through political economic and social changes that include empowering the disenfranchised, widening access to resources, narrowing the gap between the rich and poor, and adjusting consumption patterns to foster good stewardship of nature (American Dietetic Association, 2003). A mixture of broad based interventions and targeted programs

should both be implemented in order to fully alleviate hunger in all populations. Any involvement aimed at addressing food insecurity should consider the family's access to food, access to clean and safe drinking water, proximity to sustainable agriculture, regional ethnic and political conflicts, and knowledge of nutrition and breastfeeding (Struble & Aomari, 2003). Such strategies may also be used on a national or global scale to tackle this issue.

*Cost of Hunger*

Food insecurity is one of the leading problems families face in the United States. Although the idea of hunger as a preventable "illness" is considered new, it is very much a reality. Hunger associated problems affect all areas of health, as well as performance, personal conduct and way of life. In 2010, the annual cost of hunger in America was calculated to be $167.5 billion (Shepard, 2011). This amount was calculated based on hunger-induced costs from illnesses, poor education outcomes, undermined lifetime earnings, and charity.

The cost of hunger not only spans the monetary expense governments and organizations spend on broad based and targeted interventions, but also involves the social and psychological consequences hunger has on the individual and family. The current cost of hunger, when considering all of the economic, social and mental effects, is astounding. Therefore, it is more cost effective to address the core issues of food insecurity at the heart of the problem.

When analyzing the economics of food insecurity, the cost effectiveness of hunger-associated healthcare must be considered. In 2010, hunger associated illness costs alone were $130.5 billion (Shepard, 2011). This was an increase of $32.1 billion dollars or 33%

from 2007. Based on medical research studies, food insecure individuals are more likely to experience various physical health conditions, such as headaches, stomach aches, colds, iron deficiency, more hospitalizations, longer inpatients stays, and poorer overall health status (Jeng et al., 2009). Food insecure individuals were also more likely to suffer from mental health conditions, such as anxiety, irritability, depression, and suicidal thoughts and behavior. Children in food insecure homes are twice as likely to suffer poor health and one-third more likely to be hospitalized (Perry, 2007). This data indicates that people who were food insecure were more susceptible to physical and mental health illnesses, resulting in an increase of $32.1 billion in medical costs from 2007 to 2010 (Shepard, 2011). Thus, poor nutrition and lack of food increases children's risk of compromising their immune systems and getting ill.

The US government has made it nearly unaffordable for a family to adequately feed themselves healthy, nutritious foods for every meal. Currently, there is an annual gap of $1,776 between the maximum amount of food stamp benefits provided and the amount of the Surgeon General's low-cost, health diet for a family of four (Perry, 2007). Furthermore, when considering the federal minimum wage of $7.25, a single person could only make $13,920 per before taxes year, which is between 100-133% of the federal poverty level (FPL). This amount is not nearly enough for a single parent to feed his/her family in an urban setting. According to the USDA's Thrifty Food Plan, the average cost of food items per month is $864 (Breen, 2012). Based on food prices specifically in Philadelphia, this amount represent a $196 monthly shortfall for families receiving the maximum SNAP benefit (Breen, 2012). This single parent may be the mother of two children who struggles to pay rent, heating, bills, gas, transportation, and other daily expenses. After considering

all of these factors, the money leftover to feed her family three healthy meals a day becomes extremely limited.

One option for addressing food insecurity is connecting these families with long-term food assistance support, such as WIC and SNAP, and maintaining the continual funding for such programs. Studies conducted by Children's HealthWatch, formerly known as the Children's Sentinel Nutrition Assessment Program (C-SNAP), concluded that food stamps can make a crucial difference in determining children's health and well-being. By reducing food insecurity, food stamps can decrease children's risk of hospitalizations, poor health, iron deficiency anemia, deficits in cognitive development, behavioral and emotional problems (Perry, 2007). Children's HealthWatch also found that every $1 spent on WIC resulted in savings of between $1.77 and $3.13 in health care costs in the first 60 days after a child was born (Jeng et al., 2009). By reducing food insecurity, hospitalizations and healthcare costs may also be reduced.

While families that receive food stamps and WIC have a reduced risk of food insecurity associated illnesses and effects, food insecurity may not be entirely eliminated. According to the USDA, in Pennsylvania, the average monthly SNAP benefit per household is $270.45 and the average monthly benefit per person on WIC is $52.32 (USDA, 2012a, 2012b). These SNAP benefit amounts are based on the USDA's Thrifty Food Plan, which was last updated in 2006 (Ettinger de Cuba, 2012). Therefore, many of these calculated SNAP benefits no longer reflects the real cost of food in some areas. Furthermore, food prices in urban areas are much higher than that of the state average (Breen, 2012). For a mother of two young children living in the city, the average SNAP benefit amount may not be sufficient to avoid food insecurity altogether.

*Current Status of Food Insecurity*

While there is an abundance of literature and research on food insecurity and its effects on children, there is limited concrete knowledge about how to effectively address the issue. The most efficient method is through federal nutrition programs, such as SNAP and WIC. However, these government assistance programs have many fallbacks that are a limiting factor in truly eliminating food insecurity and its many associated illnesses.

Federal assistance programs, such as SNAP, WIC, LIHEAP and housing subsidies, are ways the United States government addresses food insecurity and poverty. SNAP is the federal food stamps program aimed to provide nutritious foods to those who need assistance. The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is a federal grant program that targets low income pregnant or new mothers who are nutritionally at risk. LIHEAP is a federal block grant awarded to states to assist low-income households, particularly those that pay a large percentage of their income for home energy. Often times, families find it difficult to pay heating bills in the winter. Studies have shown that food stamps and LIHEAP help modify the effects of child food insecurity and hospitalizations, but do not by itself eliminate the issue (J. T. Cook et al., 2004; J. T. Cook et al., 2006; Frank et al., 2006). Furthermore, the health problems associated with low-income children is shown to decrease when the family received either WIC, food stamps, or both (Lee, Mackey-Bilaver, & Chin, 2006). Children in these families had a lower risk of being diagnosed with anemia, failure to thrive, and nutritional deficiencies. Therefore, evidence shows that federal assistance programs do help alleviate some of the problems associated with food insecurity. However, federal assistance program by themselves do not eliminate food insecurity issues and should not be seen as a sole resource for families.

Additional types of wrap around care are necessary in order to fully eliminate the disparities seen among those that suffer from food insecurity and other hardships.

One of the greatest governmental fallbacks in federal nutrition programs is its inability to eliminate food insecurity in America. Food stamp benefits do not account for the urban settings or the various other hardships that families may face. In an attempt to alleviate some of the discrepancies, some federal programs aim to provide immediate assistance and sustained food resources to food insecure children and families. One such program is the America's Second Harvest Kids Café program. America's Second Harvest is the largest hunger relief organization in the United States that works with over 200 food banks to distribute free food to needy families and charitable agencies (Tapper-Gardzina & Cotugna, 2003). The Kids Café is an initiative by America's Second Harvest that aims to provide a safe after school space for children 6 to 18 years old, free after school meals, and educational and mentoring activities (Tapper-Gardzina & Cotugna, 2003). These types of programs that invest in young children and families have shown to be successful in providing food to families that need it.

Currently, charity care is one of the most common ways of supplementing food to families that do not receive enough from federal nutrition programs. Most of the charity care comes from voluntary work and donated time. Feeding America is the nation's leading domestic hunger relief program whose mission is to address hunger through nationwide food banks and inspire people to join in on the effort. The Emergency Food Assistance System consists of a network of emergency kitchens, food pantries and cupboards. The Program is largely run by private organizations with assistance from the federal government. According to an Executive Summary from the findings of a client survey,

almost three-fourth of the clients served by the Emergency Food Assistance Program are food insecure (Briefel, 2003). However, in today's economic society, food banks and emergency soup kitchens cannot cope with the enormity of the food poverty situation (Riches, 2002). This suggests that many people lack sufficient income or nutritional benefits for household food security, and that food banks play a major role in meeting the food needs of vulnerable populations (Riches, 2002). Furthermore, many food providers have different perceptions of the problem, do not truly gauge the need of their clients, and fail to reduce the risk of food insecurity for the families they serve (Hamelin, Mercier, & Bédard, 2010). Although charity care attempts to close the gap for families that do not receive enough federal assistance or income, it has become a basis of complacency for the federal government (Poppendieck, 1998). Rather than tackling the issues directly, the Emergency Food Assistance Program becomes a major factor in the nation's inability to recognize and eliminate food poverty (Poppendieck, 1998; Riches, 2002). Thus, charity care may be classified as a "needs-based approach," in which people who lack food access are passive recipients without obligation or legal protections (Chilton & Rose, 2009). Instead of a patchwork solution to addressing food insecurity, the government should take a rights based approach to change the environment and policy so people can take an active effort in procuring food (Chilton & Rose, 2009).

*Hospital Involvement in Addressing Food Insecurity*

Some researchers have noted the potential benefits of addressing food insecurity in a health setting (Kursmark & Weitzman, 2009). Since there are so many direct health issues associated with hunger, food insecurity should be considered a risk factor for children's well-being. Consequently, clinicians should identify children who are food

insecure to avoid detrimental development and co-morbidities (Kursmark & Weitzman, 2009). Professionals should have the responsibility and initiative to take action and work together to alleviate food insecurity. They may educate themselves on issues surrounding food insecurity, ramifications of domestic policy on families affected, volunteer in government and nongovernment programs involved with hunger, writing and calling political representatives expressing concerns, and engage in food insecurity outreach efforts (Struble & Aomari, 2003).

Furthermore, medical institutions may become more actively engaged in addressing food insecurity by using a brief food insecurity screening tool. Based on analysis of the United States Department of Agriculture Household Food Security Survey, the first two questions were most frequently answered in a positive fashion by food insecure families (Hager et al., 2010). Furthermore, the two questions had a 97% sensitivity and 83% specificity rate indicating high accuracy and validity in screening for a food insecure family (Hager et al., 2010). Therefore, these two questions can easily be used as a quick screen in medical institutions to identify food insecure families and provide assistance to them. The 2-item food insecurity screen may also help develop services to protect children's health, avoid developmental consequences, and prevent food insecurity associated illnesses.

*"Hunger-free Hospital" Model*

The concept of "hunger-free hospitals" is one of several ways the city can help monitor and alleviate food insecurity in Philadelphia. Although this model may initially be considered a program to help specific populations, it has the potential to become a national or global standard of care for the general population. In time, this targeted program in

Philadelphia could evolve into a broad-based intervention and have the ability to affect political and economic policy if enough influence and support is attained.

Philadelphia poverty rates are nearly double the national and state levels. The Household Health Survey in 2004 found that 8.7% of adults living in Pennsylvania were at risk for food insecure and 5.4% were at risk of being severely food insecure (Base, 2010). That amounts to over 400,000 people who are living with food insecurity, 130,000 of which are children. Furthermore, the number of Philadelphians accessing food pantries has drastically increased over the last few years. Currently, there are over 700 charitable food cupboards in the city, most of which are house in churches and managed by elderly volunteers. These cupboards are under-resourced and highly used, and has developed into a system that was not intended or designed for its current supply and need.

Philadelphia is an ideal place to introduce "hunger-free hospitals." There are 16 major hospitals in the city and over 40 medical institutions. The high quality and world-renowned care provided by major hospitals in the area makes it an excellent location to launch this nationally relevant program. There are a number of ways to measure and monitor food insecurity on a city-wide level. For example, Public Health Management Corporations' Community Health Data Base provides information assistance for health and human service agencies in Southeastern Pennsylvania. This organization could potentially assess, collect information, measure and monitor the level of food insecurity through community-based surveys. However, this organization would lack the follow-up care to address hunger-associated illnesses from which food insecure families may suffer. Analysis of the measurements, monitoring responsibility and information collection could also be completed by other organizations that focus on food insecurity, such as Map the Meal Gap

and Children's HealthWatch. However, the most effective institution that could assess food insecurity levels most accurately would be the medical system. Hospitals and clinics are in the most advantageous positions to address and treat problems associated with food insecurity. Thus, a strong partnership between hospital systems and city government should be fostered.

The conceptual framework of this project aims to monitor and address food insecurity through a systematic method. A "hunger-free hospital" is able to link patients who screen positive for food insecurity with short and long term resources for food. Furthermore, these hospitals would be able to track the level of food insecurity in their areas more accurately and efficiently. Hospitals would also help connect food insecure families with federal resources, such as SNAP and WIC. In the long run, "hunger-free hospitals" can also be considered part of a larger endeavor to decrease the rate of food insecurity in Philadelphia.

The concept of "hunger-free hospitals" is a uniquely creative and new model used to address food insecurity. Logically, hospitals are a source of health, medicine and treatment. Based on consistent research linking food insecurity with an increased risk of disease and sickness, hospitals should begin to address hunger-associated illnesses and its prevention as a significant medical issue. Furthermore, hospitals are the ideal locations to address food insecurity. Medical institutions remain at the hub of screening and evaluating all children that pass through its doors. All families with young children have visited the hospital for a myriad of reasons, including check-ups, vaccinations, or emergency room visits. Thus, hospitals are the premier sites to screen for food insecurity in families, especially with young children.

As a health institution, simply screening for food insecurity is considered inadequate and irresponsible care. One of the many things hospitals can do to better the public's health is to improve follow-up care. Becoming a "hunger-free hospital" is a tangible, rational and logical step hospitals could take for the continual protection of children's health. Medical institutions should consider all aspects that have or could potentially affect children's physical, mental and socio-economic well-being. Furthermore, hospitals should consider how children's present situations could impact their future conditions. Addressing food insecurity is a socially just, moral obligation hospitals should undertake to increase the standards of children's care. By creating stronger relationships between food pantries or food companies with the medical realm, hospitals may better offer the holistic care children need. "Hunger-free hospitals" is one proactive method medical facilities may take in addressing food insecurity in America.

The anticipated contributions "hunger-free hospitals" will have on Philadelphia are immediate decreases in the level of food insecurity, an integration of systems that are currently disparate, and an increased attention and monitoring of food insecurity. Furthermore, the city would be able to track the level of food insecurity more efficiently and accurately. Thus, the Office of the Mayor in Philadelphia has devoted much time and effort to working with possible stakeholders. If successfully developed and implemented, the long-term benefits of comprehensive surveillance, improved health and decreased health care costs are invaluable.

"Hunger-free hospitals" could also be used as a nested intervention in an overall plan of addressing food insecurity in Philadelphia. Hospitals or the data referral and tracking agency may integrate outreach for multiple federal assistance programs in

addition to SNAP and WIC. Families that are eligible for food stamps most likely qualify for other types of aid as well. In addition to improving access to SNAP, the bigger picture may also involve improving access to nutritious foods, making nutritious foods more affordable, and further developing an effective emergency food system.

An important factor to note is that this project will not be evaluating the outcome of "hunger-free hospitals" due to time constraints. A full evaluation of "hunger-free hospitals" should be performed through the analysis of compiled quarterly reports starting from the implementation of the model.

**SPECIFIC AIMS**

The overall objective of this project is to develop the "hunger-free hospital" model, and create an efficient and effective operating function based on the model. In order for successful implementation, relationships and trust must be developed between all participating parties, including providers, food suppliers, patients and other stakeholders in the community.

The main aims of this project are to:

- Develop and implement a "hunger-free hospital" model
- Develop relationships between key stakeholders to create a successful model
- Determine a more accurate level of food insecurity in Philadelphia
- Decrease the level of food insecurity in Philadelphia
- Disseminate the importance of the "hunger-free hospital" model

**RESEARCH DESIGN AND METHODS**

*Criteria for "Hunger-Free Hospitals"*

Hospitals may be recognized for their commitment to become a "hunger-free hospital" if they fulfill the first three of the following criteria. Furthermore, hospitals may actually be designated as a "hunger-free hospital" if they fulfill Criteria 1-3, plus 4-5 additional ones of their choosing. With a designation, a medical institution would be:

1. Screening for food insecurity with 2-item validated screening tool and recording the outcome of the food insecurity screening in the Electronic Medical Record.
2. Help food insecure families apply for SNAP, and other federal programs if applicable.
3. Integrate screening for SNAP and WIC as a routine part of the financial services provided to hospital patients. For example, hospital staff completing Medicaid applications could add SNAP to the online benefits application, COMPASS.
4. Have social work staff or other trained professionals follow up on outcome of benefit applications.
5. Provide data to the city on a quarterly basis to assist with city-wide monitoring of food insecurity and hospital efforts to alleviate it.
6. Educate doctors and other hospital staff on food insecurity. This may help remove the stigma of food assistance by encouraging patients to enroll in SNAP and WIC, and make use of school breakfast, lunch, after-school meals, and if necessary, emergency food.
7. Coordinate with the local WIC office to implement a WIC Enrollment Program at the hospital, using local WIC outreach workers.
8. Provide immediate relief to hunger by: *(choose 1 or several)*
    a. creating an on-site food pantry

b. providing gift cards to the local supermarket
c. developing relationships with nearby farmer's markets or food trucks that could stop by the hospital once a week
d. developing partnership with a food pantry that is close in proximity
e. providing food insecure patients and families with free or discounted meals in the hospital cafeteria

9. Doctors could write "prescriptions" for food to address medical problems, such as low-salt items for high blood pressure. Doctors could also write "prescriptions" when a patient screens positive for food insecurity, which could be filled out at the hospital pantry, partner local food pantry, or partner local farmer's market.
10. Spread the word about what the hospital is doing about hunger, and how other area hospitals can join the effort.

*Overview of the Practice*

An important feature of the " hunger-free hospital" is the integration of the food insecurity status into patients' Electronic Medical Records. Recording and tracking patients' food insecurity statuses is essential to the comprehensive healthcare that clinicians should provide. Not only can this information be used to determine the successfulness of this model, but also it could be used to understand the outcomes of food insecure children.

"Hunger-free hospitals" relies heavily on the cooperation and relationships between medical institutions, state and county assistance offices, food pantries, food distribution centers, supermarkets, the city and other key stakeholders in the community.

Consequently, developing and strengthening these relationships is a significant component in the implementation and continual successful operation of this model.

The heart of the "hunger-free hospital" concept is identifying food insecure children and families. This is done through a simple food insecurity screening with all pediatric visits to the hospital. The screening consists of a 2-item questionnaire, which can be read as follows:

> Now I'm going to read you several statements people have made about their food situation. For each one tell me which one is "often true", "sometimes true" or "never true" for the past 12 months that is since last (name of current month).

1. We worried whether our food would run out before we got money to buy more.
2. The food we bought just didn't last and we didn't have money to get more.

Patients or families of patients would answer if these two questions apply to them all of the time (always true), some of the time (sometimes true) or never (never true). An answer of always true or sometimes true to either questions would indicate a positive food insecurity screen. A positive food insecurity screen would be recorded on the patient's Electronic Medical Record so that clinicians may treat the patient appropriately at follow-up visits.

Screening may be done through a variety of methods as long as it is asked with dignity and respect. The screening may be performed by anyone from nurses, medical assistants, doctors, etc. This person would also ask permission to share the data they obtained from the screening with an outside source, which would most likely be a data referral and tracking agency. The screening may also contain questions about the patient or patient's family participation in SNAP, WIC, after school feeding programs, and school

breakfast or lunch program. This information allows the clinicians to more fully understand the food situation surrounding the household and be able to provide appropriate care for the patient.

If consent is provided, this information gets sent to the data referral and tracking agency. This organization provides follow up help with each patient that has a positive food insecurity screening. The data referral agency would also provide assistance to attaining SNAP and other federal programs if applicable. Finally, the agency would track and document whether the patient was actually able to attain SNAP and/or other types of federal assistance programs. All the data would be transferred back to the hospital and ideally, recorded in the patient's Electronic Medical Record. Aggregate data that could be used to track the level of food insecurity could be shared with the city.

Immediately after the family screens positive for food insecurity at the hospital, the doctor provides information on immediate food resources and a "prescription" to alleviate food insecurity. This "prescription" could be used for a variety of purposes including getting free or discounted meals at the hospital, getting immediate connections to food at the hospital's food pantry, getting a gift card to a local supermarket, attaining food from city food trucks, food carts, or farmers market, or receiving food from local food pantries. Ideally, this "prescription" allows a streamlined approach for patients such that they are able to attain food from partner food pantries, food trucks, food carts or farmer's markets without additional paperwork or obstacles.

If the caregiver denies the referral, then the patient may be provided with a packet of materials with food resources, ways to apply for SNAP, and methods to contact the data referral agency if he/she decides to do so at a later date.

*Data Collection Methods and Procedures*

The data referral agency would be the main partner tracking the level of food insecurity in the city and determining the rates of successful patient connections to long-term food resources, such as SNAP.

The data referral agency would share the collected information with the hospital on a designated specified time period (ie. once per week if so determined). In turn, the hospital will provide quarterly reports on key performance indicators to the evaluating organization and Office of the Mayor. These performance indicators should be agreed upon between the hospital and evaluating organization ahead of time. Some key performance indicators may include:

- Percentage of patients screened for household food insecurity
- Percentage of positively screened food insecure patients
- Rate of consent among positively screened food insecure patients
- Rate of patients who successfully connected to SNAP and/or WIC
- Percentage of patients the hospital and data referral agency called
- Percentage of patients who responded and followed up

Ideally, all of this information may also be recorded in the patients' Electronic Medical Record. A positive food insecurity screen should be recorded, regardless of whether the patient or the family provides consent to release their information to the data referral and tracking agency. This information is vital for future doctor visits because hunger can affect children in many subtle ways. A physician should know children's food insecurity status in order to provide more comprehensive healthcare.

If the patient or patient's family does provide consent to release their information to the data referral agency, the hospital should follow up to make sure the data regarding whether the family was able to attain long-term food resources, such as SNAP or WIC, was transferred back to the hospital. This data should be recorded in the patient's Electronic Medical Record. Again, this information is important for clinicians to determine the next steps in children's healthcare plans.

Tracking children's food insecurity statuses and whether they connected with short or long term food resources is invaluable to understanding the associations hunger has on children and their families. Assuming that children consistently visit the same medical institution, the data attained may allow for a longitudinal study of the consequences of childhood hunger. This would allow for a stronger determination of the causation between hunger and developmental consequences. Furthermore, tracking this data would also allow researchers to find unknown potential consequences and associations between hunger and children's development.

Evaluations of the "hunger-free hospital" model's success of alleviating food insecurity will depend on the trend of key performance indicators. Although some initial evaluations may be performed to determine the current level of food insecurity, it is not within the scope of this project. A more thorough evaluation of "hunger-free hospitals" should be performed on a quarterly basis and tracked continuously as the model is implemented and sustained.

All quarterly reports and analyses of key performance indicators should be shared with the Office of the Mayor. This allows the City to analyze aggregate data compiled across Philadelphia. Trends in individual hospitals may be difficult to see, but may be

easier to recognize in a series of large medical institutions. Thus, the City would have the most up-to-date information to make informed decisions on addressing food insecurity.

A potential challenge may be attaining an initial accurate level of food insecurity in the City. Theoretically, the rate of positively screened patients should decrease with time as more patients become connected to SNAP and WIC. Through the hospital, positively screened patients should be able to obtain short-term food resources if necessary and be connected to long-term assistance, such as food stamps. Over time, positively screen patients should no longer be food insecure from the multitude of available food resources, thus, decreasing the level of food insecurity in the City. Depending on the precision of the baseline level of food insecurity in Philadelphia, there may be an initial increase in the recorded number of food insecure patients as more people discover the services hospitals are providing. This increasing trend should reverse when an accurate number of positively screened food insecure patients is determined. A steady trend of positively screened food insecure patients may indicate that the "hunger-free hospital" model is not an effective intervention in alleviating food insecurity. Such a trend would show that rates of food insecurity are not decreasing overall and positively screened patients continue to be food insecure. This may require further collaborations between community partnerships and analyses behind critical junctions in the "hunger-free hospital" model to determine potential areas of improvement.

*Timeline for Project Activities*

September
- Meet with advisor

October
- Meet with advisor

- Develop “Hunger-Free Hospital” model
- Concept paper to Mayor
- Reach out to Jefferson
- Reach out to St. Chris
- Get caught up on previous meetings with CHOP
- Develop food resource packet

November
- Meet with advisor
- Meet with SHARE – gather information on setting up pantries in clinics
- Meet with Philabundance – gather food resources, gather information on best possible partnering pantries
- Meet with Broad Street Ministry – one potential partner pantry
- Meet with Benefits Data Trust – gather information on data sharing
- Meet with Coalition Against Hunger – gather food resources, gather information on data sharing
- Meet with CHOP – update everyone on recent activities, reevaluate plan for implementation
- Meet with Mayor’s Office – update on previous and upcoming events
- Develop food resource packet
- Finish concept paper for Mayor’s Office

December
- Meet with advisor
- Meet with Mayor’s Office – update on recent activities, provide anticipated plans for the future
- Meet with “favored” food pantry in West Philly
- CHOP connects with Coalition Against Hunger for more information
- CHOP connect with Benefits Data Trust for more information
- Meeting with Jefferson – possibility of working with them on “hunger-free hospitals”
- Create agenda for meetings

January
- Meet with advisor
- Weekly meetings with Mayor’s Office – provide updates on events, write meetings minutes
- Monthly  meeting with preceptor and advisor, write meeting minutes
- Dr. Chilton presents to CHOP on concept of “hunger-free hospitals”
- Dr. Chilton presents to Delaware Valley Hospitals and HealthCare Council
- Determine which data sharing agency with whom to work (w/CHOP)
- Obtain more information from Benefits Data Trust on budgetary needs
- Continue developing relationship with pantries near clinics
- Reach out to St. Christopher’s Hospital again
- Meet with St. Christopher’s Hospital

- Follow up with Jefferson on whether they are interested in "hunger-free hospital" concept
- Write memo on best pantries near CHOP
- Write memo on updates with Jefferson and St. Chris
- Revise food resource packet for city health clinics
- Create agenda for meetings
- Record meeting minutes for meetings

February
- Meet with advisor
- Monthly meeting with preceptor and advisor, write meeting minutes
- Weekly meetings with Mayor's Office – provide updates on events
- Continue developing relationships with pantries near clinics
- Follow up with Jefferson regarding internal meeting on "hunger-free hospital"
- Meet with Jefferson Hospital
- Reach out to Hahnemann Hospital
- Meet with St. Christopher's Hospital
- Determine which pantry is of highest quality and closest to St. Christopher's Hospital
- Meet with CHOP
- Meet with Philabundance
- Estimate approximate referrals from CHOP and St. Christopher's Hospital to the data referral agency
- Develop visual models of the data sharing agreements
- Attain projected budget from BDT on project expenses
- Attain sample data sharing agreement from BDT
- Create agendas for meetings
- Record meeting minutes for meetings
- Submit abstract to APHA

March
- Meet with advisor
- Weekly meetings with Mayor's Office – provide updates on events
- CHOP able to input food insecurity screening in patients' Electronic Medical Records
- Continue developing relationships with pantries near clinics
- Meet with St. Chris
- Help St. Chris with expansions to current anti-hunger efforts
- Reach out to Jefferson and Hahnemann Hospitals again
- Contacted government affairs department at St. Chris
- Create agendas for meetings
- Record meeting minutes

April
- Meet with advisor

- Weekly meetings with Mayor's Office – provide updates on events
- Continue developing relationships with pantries near hospitals and clinics
- Meet with St. Chris
- St. Chris able to input food insecurity screening into patient's Electronic Medical Records
- Meet with WIC
- CHOP starts screening for food insecurity at the 4 clinics
- Contacted government affairs department at Jefferson
- Create agendas for meetings
- Record meeting minutes
- Create poster for College of Physicians Poster Presentation
- Create powerpoint for preview

May

- Meet with advisor
- Weekly meetings with Mayor's Office – provide updates on events
- Provide CHOP updates for on-site pantry requirements
- Finish poster for College of Physician's Conference
- Present poster for College of Physician's Conferences
- Turn in thesis
- Defend thesis

June

- Meet with advisor
- Weekly meetings with Mayor's Office – provide updates on events
- Turn in final copy of thesis

**RESULTS**

In order to understand the logistics of implementing "hunger-free hospitals," community stakeholders who would contribute to successful operations are a necessary component. Information was initially gathered from several food pantries, food providers, hospital administration, hospital representatives, social workers, nutritionists, and other potential players to understand these microsystems functioned. For example, many potential flagged and favored food pantries near interested clinics and hospitals were explored to understand how they operate and ensure that enough food would be provided to patients if patients were referred to partner pantries. In order to learn more about

hospital on-site food pantries, the SHARE Food Program was contacted in order to determine regulations around food storage and delivery of food to hospitals. WIC was consulted to learn more about creating a hospital on-site WIC office, how to retain and attract more participants, and possible involvement of WIC in the "hunger-free hospital" model. The Camden Coalition of Healthcare Providers were also consulted in order to learn more about exchange of patient information, the various types of agreements necessary to create a centralized patient database, sample legal documents for data sharing agreements, and types of data sharing agreements useful in the "hunger-free hospital" model. Multiple data sharing agreement models were created.

All the data sharing agreement models depict the core details of the "hunger-free hospital." The hospital conducts the food insecurity screen to all patients. If a patient screens negative, he/she is given a Food Resource Packet. If the patient screen positive, but refuses help and/or consent for their information to be shared with the data referral agency, a packet of food resources is provided. However, if the patient does provide consent, the outside referral agency will provide assistance on applying for federal assistance programs, such as SNAP. The referral agency will track and share a number of performance indicators, such as the rate of successful connections with SNAP, with the hospital. From this point, the models show slight changes in the various data sharing agreements needed to track and analyze the data. Model #1 shows the preferred method of data sharing, which is to have agreements between the hospital itself, and Drexel University and the City (Figure 1). This would allow the hospital to attain control of their data and is most closely in line with the philosophy of addressing food insecurity through preventative care. Model #2 shows the data referral agency having separate data sharing

agreements with Drexel University and the City (Figure 2). Drexel University may be provided with more detailed information to perform analyses on the progression of "hunger-free hospitals", while the City may be provided with aggregate data to track and monitor the decrease of food insecurity in Philadelphia. Model #3 depicts a data sharing agreement between the data referral agency and Drexel University, where Drexel University acts as a third party that analyzes the data and provides annual report to the City (Figure 3).

*Figure 1. Data Sharing Agreement Model #1.* Model #1 shows the hospital have a data sharing agreement with Drexel University and the City. This is the preferred model in "hunger-free hospitals."

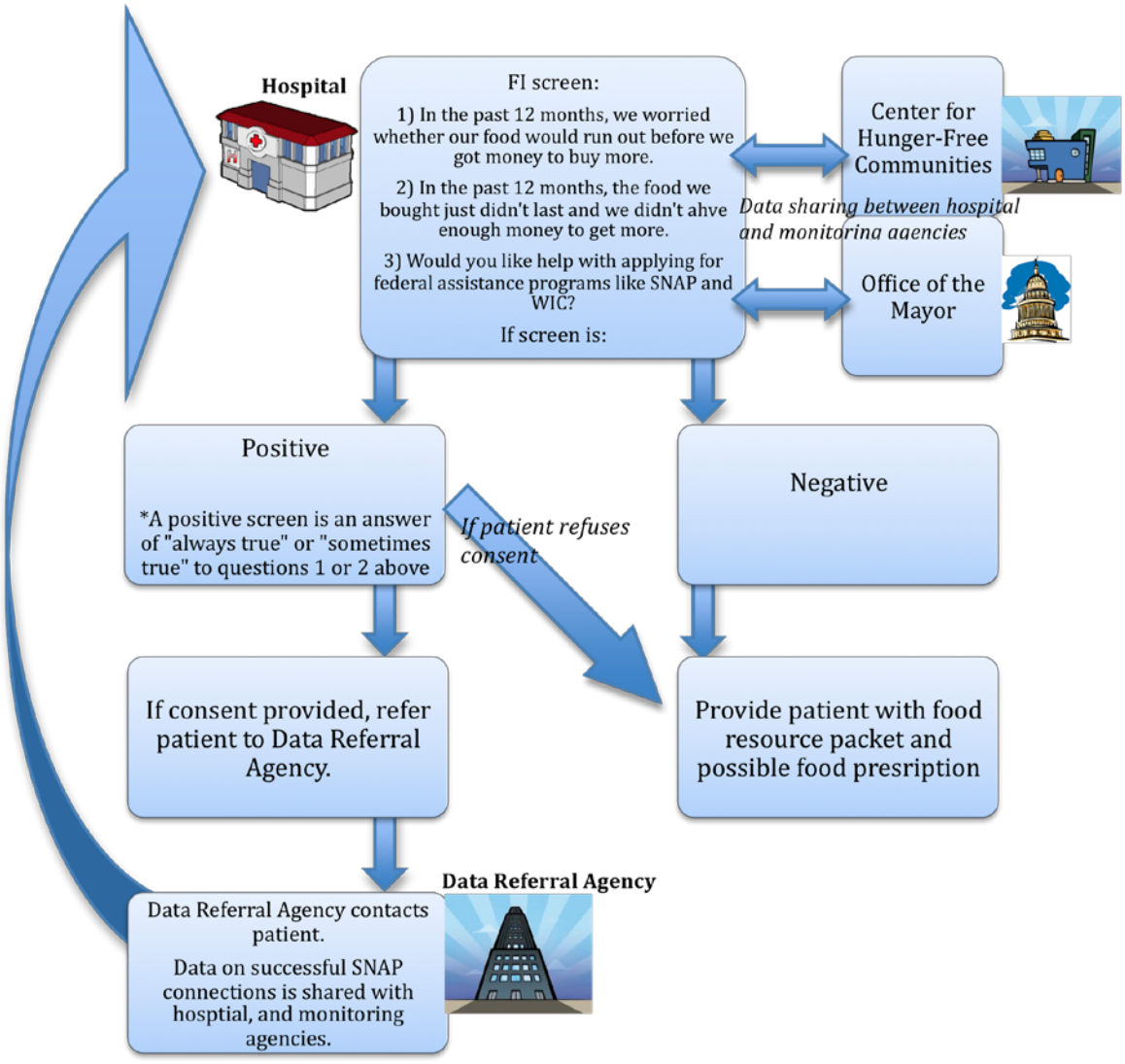


*Figure 2. Data Sharing Agreement Model #2.* Model #2 shows the data referral agency having separate data sharing agreements with Drexel University and the City.

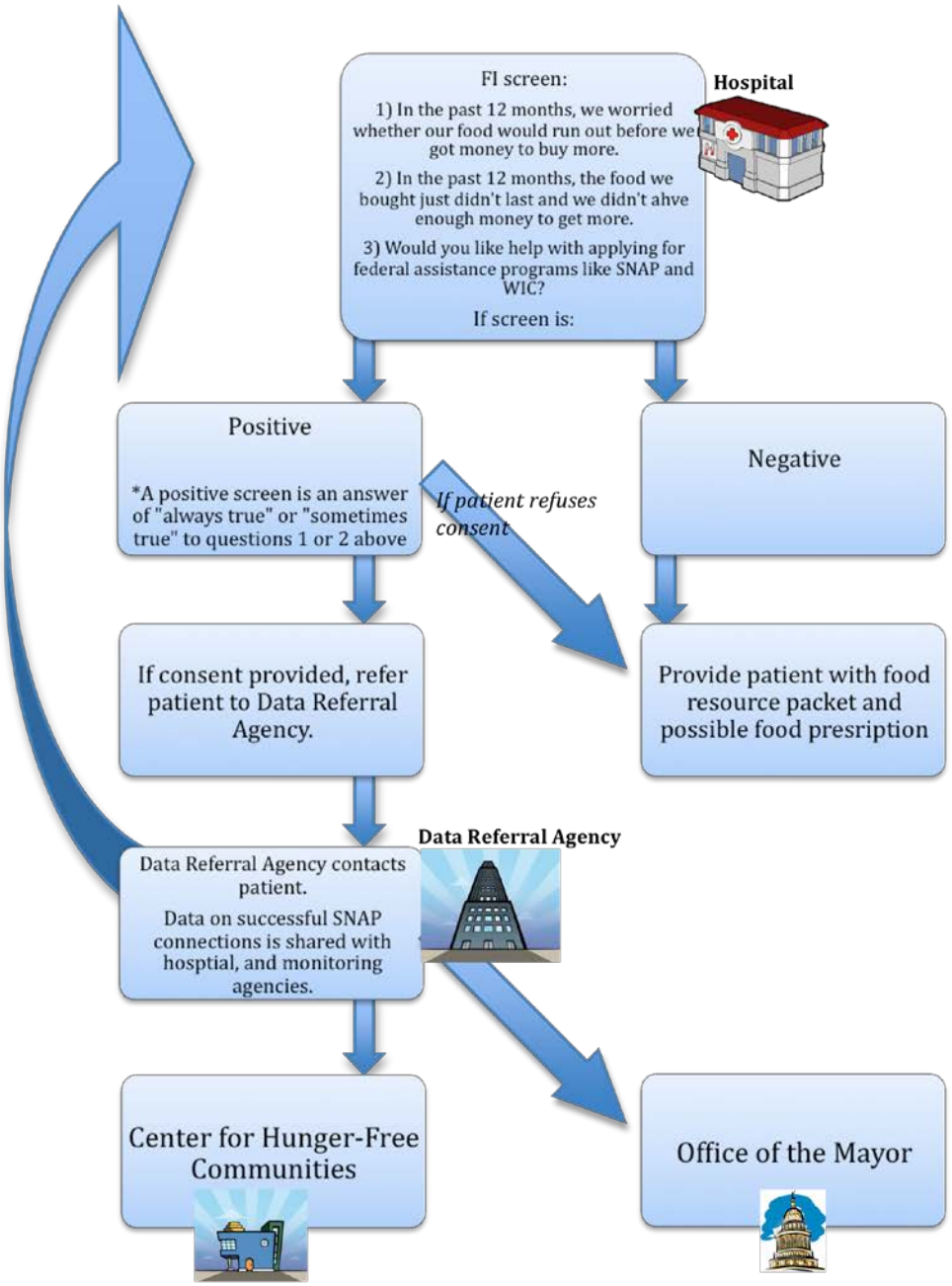
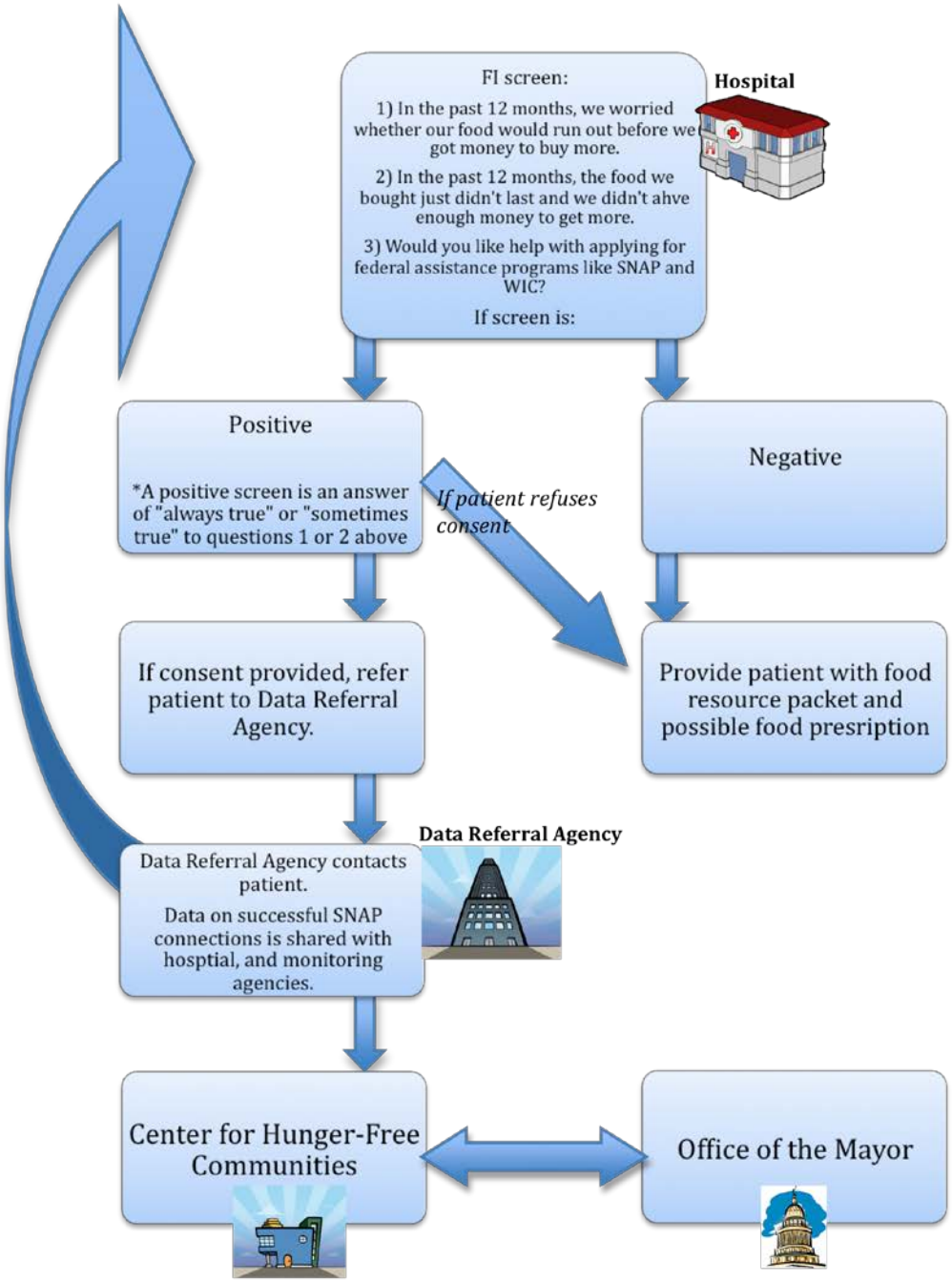


*Figure 3. Data Sharing Agreement Model #3.* Model #3 depicts a data sharing agreement between the data referral agency and Drexel University, where Drexel University acts as a third party that analyzes the data and provides annual report to the City



Multiple hospitals in Philadelphia were contacted and presented with the "hunger-free hospital" concept. Many of these hospitals showed an interest in addressing food insecurity and understood the significance of incorporating food insecurity screenings during patient visits. However, the investment, budgetary allotments and degree of involvement with each hospital were dependent on the medical institutional themselves.

A concept paper of the "hunger-free hospitals" is the main method of introducing hospital representatives and officials to the model (Appendix A). The concept paper includes a brief introduction to the model, key criteria, and the overarching goals for the outcome of the project. Meetings with hospitals representatives, food providers, data referral and tracking agencies, food pantry leaders, city officials, and other community stakeholders occurred to understand the need of food insecure families and operational logistics of the model. Agendas (Appendix B) and meeting minutes (Appendix D) were created to prioritize discussion topics and document learned information. Memorandums (Appendix C) were provided as updates on the progress of "hunger-free hospitals.

There are several important logistical features of the model that was explored prior to implementation. First, the budgetary needs of successfully implementing and sustaining the model were determined by Benefits Data Trust, one of the many data referral agencies in Philadelphia, from the number of outpatients seen at hospitals (Appendix F). Several patient estimations were made, such as percentage of patients who would screen positive for food insecurity, percentage of patients who would accept assistance, and percentage of patients who were successfully connected to food stamps, were estimated based on

preliminary data reported from hospitals and experienced professionals in the field (Appendix G).

Children's Hospital of Pennsylvania (CHOP) was very interested in the concept of the "hunger-free hospital." Physicians and residents in the satellite clinics strongly rallied for the implementation of the "hunger-free hospital." CHOP chose to do a pilot study of the food insecurity screening at the three-year pediatrician visit at four of the hospital clinics in Philadelphia starting April 2012. The food insecurity screen has already been built into CHOP's EMR at the clinics where the pilot study will be occurring. CHOP also would like their own social work department to follow up on positively screen patients to verify the connection with the data referral and tracking agency and the process for attaining federal assistance. I helped CHOP gather information on immediate food resources, setting up a pantry within the hospital, identify flagged and favored pantries near the satellite clinics, and develop a visual model of CHOP's adaptation of the "hunger-free hospitals" model. Using the information and sources that I had gathered, residents at CHOP helped create a food resources packet to distribute to positively screened patients. A meeting with CHOP administration, CHOP representatives, Drexel University representatives, city government representatives and the Philadelphia Health Commissioner occurred to brainstorm steps CHOP could take to further their anti-hunger efforts. Internal meetings within CHOP are discussing the possibility of a community garden, incorporating smaller resident projects within the "hunger-free hospital," building a demonstration kitchen, offering community classes on how to best spend SNAP dollars, expanding relationships with farmer's markets, and building an on-site food pantry. Other suggestions, discussions and meetings with

CHOP consisted of analyses on feasibility, manageability, compliance, monitoring, and budgetary needs.

St. Christopher's Hospital for Children was also interested in "hunger-free hospitals" and has already been involved in many types of anti-hunger work. The hospital already has partnerships with several programs, including Farms to Families and Healthy Food Cart. Preliminary data shows that over 50% of customers for the Health Food Cart use their SNAP dollars to purchase fresh fruits and vegetables, which shows a demand for healthy foods among SNAP recipients. In April 2012, the Farms to Families Program showed a rise in number of boxes of food distributed to families in the area. Discussion about expanding the Healthy Food Cart and Farms to Families has occurred to accommodate the increasing demand from patients. Further way to provide short term food resources are partnering with the nearest flagged food pantry, creating an on-site pantry, becoming an E-box site (under Philabundance).

Several clinics and programs, such as the GROW clinic and ambulatory care program, at St. Christopher's Hospital is already screening for food insecurity. The ambulatory care program is also screening for other household difficulties through their Medical Legal Partnership (MLP) questionnaire. St. Christopher's Hospital developed a Medical Legal Partnership, which follows a national model of legal assistance for low-income families. THE MLP questionnaire consists of not only the 2-item food insecurity screen, but also contains questions on families' rent and energy needs. Preliminary data reported by the hospital suggests that around 20% of screened patient suffer from food insecurity. However, residents and doctors do not consistently asks whether families are on SNAP and/or WIC. The food insecurity screening will be built into the EMR as soon as

logistics about the aesthetics and location of the screen is verified. Several addition departments, including the Emergency Department and many inpatient floors, will be starting the food insecurity screening in the next few months. Implementation would require a standardization of food insecurity screening methods, IRB protocol and data sharing agreements, and most importantly administration buy-in. Although the administration from St. Christopher's Hospital supports the current anti-hunger efforts, any additional large overhead costs for further expansions are not a priority.

Jefferson Hospital showed interest in the "hunger-free hospital" model and explored options on how they can address food insecurity with their patients. The hospital is located in the 1st Congressional district, which is ranked 4th in food hardship rates in the nation (Food Research and Action Council, 2010). Consequently, hospital administration felt the obligation to address food insecurity as one of the many health issues that exists in the area. Discussions around implementing the food insecurity screening throughout the whole hospital ensued, which raised concerns over the most efficient method of screening for food insecurity. A written food insecurity screening was created as a model for hospitals that chose this form of screening (Appendix H). The written food insecurity screening was adopted from a written obesity screening performed in primary care clinics in New York City, which used the same two-item validated food insecurity screen promoted in the "hunger-free hospital" model (Karnik, 2011). However, the food insecurity screening was created as a verbal exchange rather than as a written questionnaire. Many patients also cannot read, which would create further difficulties around using a written food insecurity screen. Currently, Jefferson Hospital provides a large monetary donation to Philabundance as a way to alleviate food insecurity in the City. Further discussions about

potential anti-hunger efforts gave administrators a broader view on how to proceed with addressing food insecurity in the future.

Other parties that have shown interest in the "hunger-free hospital" include the Delaware Valley Healthcare Council, Montgomery County and city governments from other states. However, little has been done by these organizations.

**DISCUSSION**

The "hunger-free hospital" project's greatest strength is its ability to address food insecurity at the heart of the problem. As the world's leading superpower nation, the United States continues to have an extremely high poverty and food insecurity rate when compared to other developed countries. Article 25 of the Universal Declaration of Human Rights (UDHR) states that "everyone has the right to a standard of living adequate of health…including food, clothing, housing and medical care and necessary social services…"(United Nations, 1948). This ensures that people living in poverty can maintain a certain standard of living to preserve their respect and human dignity. However, the US has failed to meet the Healthy People 2010 goal of decreasing food insecurity to 6%, and refuses to ratify documents that support the individual's right to food. This may be attributed to America's failure to consider the importance of food as a basic necessity and human right. Based on the high rates of food insecurity in this country, the right to health and food should be considered of utmost importance and addressed as a national emergency. Screening and treating for food insecurity as a preventative measure to illness not only is a social justice obligation, but will also foster a change of beliefs and stigma in medical professions, patients and the general public. Addressing food insecurity through hospitals will foster a new vision for the future allowing a greater understanding and more

comprehensive intervention programs.

The social injustice and difficulties from which food insecure families suffer may leave traumatic, long-lasting effects. Studies have shown that groups who are at-risk for food insecurity suffer from constant stress, anxiety and/or hunger (Booth, 2006). This may impact their ability to function, learn, react, process information and perform. Such consequences of food insecurity in families may be subtle and its causes more difficult to determine. However, the compounded nature of these effects may impact large-scale economy and societal functions. In order to address these outcomes, programs should focus on addressing food insecurity through a human rights framework. This framework provides a "right-to-food" approach in which food insecure populations are empowered by actively participating in acquiring food (Chilton & Rose, 2009). This framework also addresses the social and economic determinants associated with food insecurity, and holds governments mainly accountable for addressing such issues (Chilton & Rose, 2009).

The human rights framework is based on a system of ideas adopted from the Universal Declaration of Human Rights. The essence of this framework is to respect, protect and fulfill human rights. The right to food is a human right that is inherent and essential to health and happiness. Consequently, governments should fulfill a number of social and economic obligations to address food security through the human rights framework. These obligations include to respect the right to food and not interfere with one's ability to acquire it, to protect the right to food and ensure that others do not interfere with access to it, and to fulfill the right to food by facilitating or creating social and economic environments that foster human development, and provide food in emergency circumstances (Chilton & Rose, 2009).

Through the human rights framework, food insecurity can be addressed by highlighting several elements that would eliminate the issue. These elements include government accountability, public participation, accounting for vulnerability and discrimination, and identifying stronger connections between polices and health outcomes (Chilton & Rose, 2009). The US government needs to take responsibility for the health of its citizens, particularly vulnerable and discriminated populations, and begin to take steps necessary to eliminate food insecurity in the country. There is strong evidence that show the positive association between nutrition policies and the public's health. Therefore, holding the government legally responsible for failing to take appropriate steps to achieve goals related to reducing food insecurity may prompt stronger efforts in this field. Increasing public education around food insecurity may also increase support and advocacy for addressing this issue. As a world leader, adopting a human rights approach to food insecurity and providing a national plan to end hunger is not only America's duty, but also sets an example for other countries.

There are several overall limitations to this project. First, I could reach out to more hospitals in the Philadelphia area, such as Temple Hospital and Hospital of the University of Pennsylvania. Other potential medical institutions may include those in nearby counties or regions. Second, outlining greater incentives and benefits of the "hunger-free hospital" concept may help promote interests among hospital administration. Stressing the human right framework approach, the social obligation to addressing food insecurity, and the long-term health and economic benefits of a "hunger-free hospital" are strong advantages that would promote this project. Third, having one of the main criteria as a necessary incorporation of the food insecurity screen into the patients' EMR may deter hospitals from

investing in this project. Many hospitals have multiple electronic medical record systems, and integrating the screen into each of them would be costly because it would require additional hours from a computer technician. The cost of paying for the technician's overtime, or hiring extra personnel, would contribute to the overhead costs of including the food insecurity screen into the EMR. Finally, incorporating data sharing with the City, outside data referral and tracking agency, and an outside report agency may seem too difficult, expensive and complicated to undertake. Although there are many obvious social and long-term health benefits to implementing the "hunger-free hospital," the short-term trade-offs may seem limited to hospitals. Furthermore, hospitals may deem that the return on investment to their own firms may be inadequate.

Other specific challenges with implementing the "hunger-free hospital" occurred around hospitals also occurred. The short term monetary input needed to implement "hunger-free hospitals" are part of a larger, overall plan to address food insecurity and poverty. However, there are many advantages to investing in various components in "hunger-free hospitals." One of the common concerns for establishing an on-site food panty and WIC office is the cost of money and space on the hospital's behalf. There use to be many WIC offices, several of which were establish in the major Philadelphia hospitals, such as Hospital of the University of Pennsylvania, CHOP, St. Christopher's Hospital, Jefferson Hospital, Temple Hospital and Einstein Hospital. However, all WIC offices located in hospitals have now been closed down. The benefits of having an on-site WIC office is its attraction of patients into the hospital, thus, ensuring long-term clientele who will revisit the institution because of its many offered services. Therefore, initial overhead investment into "hunger-free hospitals" is a strategic maneuver to not only address food insecurity, but

also rising healthcare costs.

**CONCLUSIONS AND RECOMMENDATIONS**

"Hunger-Free Hospitals" has become part of a city wide initiative to address food insecurity and poverty in Philadelphia. As the only tangible tool in providing a baseline level of food insecurity in Philadelphia, this concept allows the Mayor's Office to track and survey the rate of food insecurity in the City. The Mayor's Office may provide recognition or a stamp of approval for hospitals that do achieve a "hunger-free hospital" status. Officially offering a commendation is a strategy that forces hospitals to increase their standard of care to patients, and remove the stigmas associated with food insecurity.

The "hunger-free hospital" model has sparked an interest in several hospitals in Philadelphia and prompted a few to begin food insecurity screenings of their patients. Many have started or expanded on anti-hunger efforts to connect patients with various food resources both at the hospital and around the city. The incorporation of the food insecurity screening into the hospital EMR has also been recognized as a necessary component by several hospitals. Inclusion of food insecurity information into patients' histories allow for comprehensive and follow up care that may address food-associated illnesses. This type of preventative care may decrease the overall rate of food insecurity in the City, protect the health of Philadelphian residents, decrease healthcare costs, and address one component of poverty that contributes to drastic health disparities in the country.

There are many weaknesses in the "hunger-free hospital" model. One of the greatest challenges to successfully implementing and sustaining this project is attaining administrative buy-in as early as possible. Although limited overhead costs may occur, the

long term benefits of decreasing food insecurity and maintaining a healthier population of patients would decrease hospitals costs overall. Therefore, priorities, such as monetary needs to sustain anti-hunger efforts and space dedicated to WIC offices, must be made to preserve the core mission of eliminating food insecurity. Although initial implementation may require time and effort, the outcome of the bigger picture results in a healthier, happier population.

Several advantages are evident in the "hunger-free hospital" project. This concept is a fluid entity that is adaptable to various cultures and settings of medical institutions across the country. Therefore, it is easy to adopt one or many components of the "hunger-free hospital" model in an effort to address food insecurity. The greatest advantage to this model is its ability to address food insecurity and hunger at a fundamental level. Hospitals are valued as an institution of learning, health, and protection. Thus, pinpointing medical facilities as the hub of tackling food insecurity increases the standard of health that the United States should be providing to the public. Furthermore, it is the social obligation to assure that everyone is entitled and has the right to be healthy and happy, which includes not being hungry or food insecure. From an economic standpoint, this model is a preventative measure to eliminate hunger-associated illnesses and decrease healthcare costs. Consequently, the long term advantages are tremendous and far outweigh the short term costs of implementing the "hunger-free hospital" model.

In order to address food insecurity, the core issue of poverty and resulting health disparities is intricately intertwined. The following are some recommendations that may help local, city, state and national government address the multiple layers of problems that arise when tackling food insecurity.

The Emergency Food Assistance System is drastically underfunded and must be redesigned to accommodate the current needs of the City. Although there are many food pantries and kitchens, most are sorely lacking in quality and amount of food. Furthermore, pantries are not culturally competent to provide the types of food that families want in certain areas of the City. Many families that are food insecure are not willing to wait hours in line for limited amounts of foods that are not culturally sensitive, fresh, or nutritious. Furthermore, families may be unwilling to dedicate their efforts into obtaining food from pantries if there is a possibility of being turned away. Finally, food insecure families need to be treated with respect and understanding at pantries and kitchens. People respond to the negative experiences at food pantries and may be further pushed away if they are treated poorly when asking for help. The Emergency Food Assistance System was not designed to feed the number of people that it currently does. Based on the needs and issues of the community, various levels of governments need to redesign the Emergency Food Assistance System.

Another suggestion of addressing food insecurity is to ease the maneuverability of the food stamp system for applicants. In Philadelphia, more than 460,000 residents, or one-quarter of the city's population, now use SNAP (Coalition Against Hunger, 2010). However, there are still more than 180,000 residents who are eligible but do not receive benefits (Coalition Against Hunger, 2010). Increased application processing times at the County Assistance Office, difficulties in communication, and mistakes that occur in transition have deterred many families from applying or reapplying for SNAP benefits. Also, some families are unwilling to confront workers at the County Assistance Office and the Department of Public Welfare who may have misperceptions of families that need food

stamps. Therefore, an atmosphere of openness, consideration and respect is essential to draw food insecure families into offices where they can receive help. Families may be encouraged to rely on federal assistance to help alleviate their food concerns if barriers to attaining food stamps are reduced.

A third suggestion to addressing food insecurity is to increase access to healthy, fresh, nutritious foods. Food deserts are common in many parts of the nation, including Philadelphia. Cities and organizations should widely distribute farmers markets, food trucks, food carts, and fresh fruits and vegetables in food desert communities. Local, city, state and/or federal government can provide monetary incentives for this to occur. Corner stores and small vendors may be compensated for regularly selling fresh fruits and vegetables, rather than unhealthy snack and sugary beverages. Already, the City of Philadelphia has begun to subsidize corner stores to promote the selling of fruits and vegetables. However, ensuring that these fruits and vegetables are fresh, edible and of good quality is important to increase its attractiveness to consumers. Governments may further subsidize fresh, healthy foods by lowering its price while increasing the cost of unhealthy snacks. This would promote the purchase of healthy foods by people of all income levels. The City of Philadelphia has also subsidized farmers markets and food carts to distribute food in areas where access is limited. However, such ventures are difficult to sustain and earn profit. Further efforts around the sustainability of food carts, and ensuring the quality of fresh fruits and vegetables at corner stores would improve the initiatives already operated by the City. Currently, there is no evidence that these efforts will alleviate food insecurity.

Finally, the "hunger-free hospital" should be highly publicized by the City of Philadelphia and its medical institutions. Although there are limited immediate advantages to the hospital, there are endless long-term benefits. Such benefits would include decreased food insecurity levels, more accurate and comprehensive surveillance of food insecurity, a healthier community, and decrease healthcare costs for at every governmental level. With a decrease in food insecurity and hospitalizations, hospitals would save money because there would be fewer patients that need immediate care at departments, such as the Emergency Department, that is widely known for decreasing hospital revenue. This would decrease hunger associated illnesses overall, which would maintain the health of the individual. Healthier people visit the hospital less frequently, thus decreasing healthcare costs overall at the city, state and national level. Finally, there would be priceless rewards reaped from the social, moral and ethical obligation of providing preventative care by addressing food insecurity. Food insecurity is not only a social justice, but also a human rights issue that can no longer be ignored. The "hunger-free hospital" model may be used alone or part of a larger strategy of tackling food insecurity. This concept is just one of many steps needed to eliminate food insecurity and create a healthier, hunger-free community.

**REFERENCES**


Alaimo, K., Olson, C. M., & Frongillo, E. A. (2002). Family food insufficiency, but not low family income, is positively associated with dysthymia and suicide symptoms in adolescents. *J Nutr, 132*(4), 719-725.

American Dietetic Association. (2003). Position of the American Dietetic Association: addressing world hunger, malnutrition, and food insecurity. *Journal of the American Dietetic Association*(8).

Base, C. H. D. (2010). 2004 Household Health Survey, from http://www.chdbdata.org/datatool/surveyresults.asp

Belsky, D. W., Moffitt, T. E., Arseneault, L., Melchior, M., & Caspi, A. (2010). Context and Sequelae of Food Insecurity in Children's Development. *American Journal of Epidemiology, 172*(7), 809-818. doi: 10.1093/aje/kwq201

Black, M. M., Cutts, D. B., Frank, D. A., Geppert, J., Skalicky, A., Levenson, S., . . . and the Children's Sentinel Nutritional Assessment Program Study Group. (2004). Special Supplemental Nutrition Program for Women, Infants, and Children Participation and Infants' Growth and Health: A Multisite Surveillance Study. *Pediatrics, 114*(1), 169-176.

Booth, S. (2006). Eating rough: food sources and acquisition practices of homeless young people in Adelaide, South Australia. *Public Health Nutr, 9*(2), 212-218.

Breen, A., Cahill, R, Ettinger de Cuba, S, Cook, J & Chilton, M. (2012). The Real Cost of a Healthy Diet: 2011. Boston, MA: Children's HealthWatch.

Briefel, R., Jacobson, J, Clusen, N, Zavitsky, T, Satake, M, Dawson, B & Cohen R. (2003). *The Emergency Food Assistance System - Findings From the Client Survey: Executive Summary*. Retrieved from http://www.ers.usda.gov/publications/fanrr32/.

Casey, P. H., Szeto, K. L., Robbins, J. M., Stuff, J. E., Connell, C., Gossett, J. M., & Simpson, P. M. (2005). Child health-related quality of life and household food security. *Arch Pediatr Adolesc Med, 159*(1), 51-56.

Children's HealthWatch. (2011). *Frequencies-Demographics/Outcomes: June 1998-December 2011*. Health Management and Policy. Drexel University.

Chilton, M., Chyatte, M., & Breaux, J. (2007). The negative effects of poverty & food insecurity on child development. *Indian J Med Res, 126*(4), 262-272.

Chilton, M., & Rose, D. (2009). A rights-based approach to food insecurity in the United States. *Am J Public Health, 99*(7), 1203-1211.

Coalition Against Hunger. (2010). SNAP (Food Stamp) Campaign Retrieved May 20, 2012, 2012, from http://www.hungercoalition.org/snap-campaign

Cook, J., Frank, D., Suzette, M. L., Nicole, B. N., & et al. (2006). Child Food Insecurity Increases Risks Posed by Household Food Insecurity to Young Children's Health1,2. *The Journal of Nutrition, 136*(4), 1073.

Cook, J., March, E., & Ettinger de Cuba, S. (2009). Even Very Low Levels of Food Insecurity Found to Harm Children's Health. Children's HealthWatch, May 2009. In C. s. H. http://www.childrenshealthwatch.org/upload/resource/LowLevelFoodInsecurityBrief5_09.pdf (Ed.).

Cook, J. T., & Frank, D. A. (2008). Food security, poverty, and human development in the United States. *Ann N Y Acad Sci, 1136*, 193-209.

Cook, J. T., Frank, D. A., Berkowitz, C., Black, M. M., Casey, P. H., Cutts, D. B., . . . Nord, M. (2004). Food insecurity is associated with adverse health outcomes among human infants and toddlers. *J Nutr, 134*(6), 1432-1438.

Cook, J. T., Frank, D. A., Levenson, S. M., Neault, N. B., Heeren, T. C., Black, M. M., . . . Chilton, M. (2006). Child food insecurity increases risks posed by household food insecurity to young children's health. *J Nutr, 136*(4), 1073-1076.

Ettinger de Cuba, S., Weiss, I, Pasquariello, J, Schiffmiller, A, Frank, DA, Coleman, S, Breen, A, & Cook, J. (2012). The SNAP Vaccine: Boosting Children's Health. Boston, MA: Children's HealthWatch.

Felitti, V., Anda, R., F., Dale, N., David, F. W., Alison, M. S., Valerie, E., . . . James, S. M. (1998). Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults: The Adverse Childhood Experiences (ACE) Study. *American journal of preventive medicine, 14*(4), 245-258.

Food Research and Action Council. (2010). Food Hardship: A Closer Look at Hunger Data for the Nation, States, 100 MSAs, and Every Congressional District. In http://frac.org/Press_Release/food_hardship_report_jan2010.htm (Ed.). Washington, DC.

Fram, M., Frongillo, EA, Jones, SJ, WIlliams, RC, Burke, MP, DeLoach, KP & Blake, CE. (2011). Children Are Aware of Food Insecurity and Take Responsibility for Managing Food Resources. *Journal of Nutrition, 141*(6), 1114-1119.

Frank, D. A., Casey, P. H., Black, M. M., Rose-Jacobs, R., Chilton, M., Cutts, D., . . . Cook, J. T. (2010). Cumulative hardship and wellness of low-income, young children: multisite surveillance study. *Pediatrics, 125*(5), e1115-1123.

Frank, D. A., Neault, N. B., Skalicky, A., Cook, J. T., Wilson, J. D., Levenson, S., . . . Berkowitz, C. (2006). Heat or eat: the Low Income Home Energy Assistance Program and nutritional and health risks among children less than 3 years of age. *Pediatrics, 118*(5), e1293-1302.

Frongillo, E. A., Jyoti, D. F., & Jones, S. J. (2006). Food Stamp Program participation is associated with better academic learning among school children. *J Nutr, 136*(4), 1077-1080.

Gayman, A., Ettinger de Cuba, S, Cook, JT, March, EL & Coleman, S. (2010). WIC Improves Child Health and School Readiness. Boston, MA: Children's HealthWatch.

Hager, E. R., Quigg, A. M., Black, M. M., Coleman, S. M., Heeren, T., Rose-Jacobs, R., . . . Frank, D. A. (2010). Development and validity of a 2-item screen to identify families at risk for food insecurity. *Pediatrics, 126*(1).

Hamelin, A. M., Mercier, C., & Bédard, A. (2010). Discrepancies in households and other stakeholders viewpoints on the food security experience: A gap to address. *Health Education Research, 25*(3), 401-412.

Jeng, K., March, E., Cook, J., & Ettinger de Cuba, S. (2009). Feeding Our Future: Growing Up Healthy with WIC. In C. s. HealthWatch (Ed.),

http://www.childrenshealthwatch.org/upload/resource/Feeding_our_future.pdf. Boston, MA.
Karnik, A., Foster, B.A., Mayer, V., Pratomo, V., McKee, D., Maher, S., Campos, G. & Anderson, M. (2011). Food Insecurity and Obesity in New York City Primary Care Clinics. *Medical Care, 49*(7), 658-661.
Kursmark, M., & Weitzman, M. (2009). Recent findings concerning childhood food insecurity. *Current Opinion in Clinical Nutrition and Metabolic Care, 12*(3), 310-316.
Lee, B., Mackey-Bilaver, L., & Chin, M. (2006). Effects of WIC and FoodStamp Program Participation on Child Outcomes (pp. 41). Washington, DC: United States Department of Agriculture.
March, E., Cook, J. T., Ettinger de Cuba, S., Gayman, A., & Frank, D. A. (2010). Healthy families in hard times: Solutions for multiple family hardships. Boston, MA: Children's HealthWatch.
March, E., Ettinger de Cuba, S, Gayman, A, Cook, J, Frank, DA, Meyers, A, Coleman, S & Yang, A. (2009). Rx for Hunger: Affordable Housing. Boston, MA: Children's HealthWatch.
Melchior, M., Caspi, A., Howard, L. M., Ambler, A. P., Bolton, H., Mountain, N., & Moffitt, T. E. (2009). Mental health context of food insecurity: a representative cohort of families with young children. *Pediatrics, 124*(4), e564-572.
Nord, M., Coleman-Jensen, A., Andrews, M., & Carlson, S. (2010). Household food security in the United States, 2009. Washington, DC: Economic Research Service.
Nord, M., & Hopwood, H. (2007). Recent advances provide improved tools for measuring children's food security. *J Nutr, 137*(3), 533-536.
Perry, A., Emerson, B., de Cuba, S.E., Cook, J & Frank, D. (2007). Food Stamps as Medicine: A New Perspective on Children's Health., 1-6.
Poppendieck, J. (1998). *Sweet Charity?: Emergency Food and the End of Entitlement.* New York: Viking Press.
Riches, G. (2002). Food Banks and Food Security: Welfare Reform, Human Rights and Social Policy. *Social Policy & Administration, 36*(6).
Rose-Jacobs, R., Black, M. M., Casey, P. H., Cook, J. T., Cutts, D. B., Chilton, M., . . . Frank, D. A. (2008). Household food insecurity: associations with at-risk infant and toddler development. *Pediatrics, 121*(1), 65-72.
Shepard, D., Setran, E & Copper, D. (2011). Hunger in America: Suffering We All Pay For. (Center for American Progress), 1-21.
Shonkoff, J. P., Boyce, W. T., & McEwen, B. S. (2009). Neuroscience, molecular biology, and the childhood roots of health disparities: Building a new framework for health promotion and disease prevention. *Journal of the American Medical Association, 301*(21), 2252-2259.
Struble, M., & Aomari, L. (2003). Position of the American Dietetic Association: Addressing world hunger, malnutrition, and food insecurity. *Journal of the American Dietetic Association, 103*(8), 1046-1057.
Tapper-Gardzina, Y., & Cotugna, N. (2003). The Kids Cafe: a program to reduce child hunger. *J Pediatr Health Care, 17*(1), 18-21.
Universal Declaration of Human Rights (1948).
USDA. (2011, September 7, 2011). Food Security In the United States Retrieved December 1, 2011, from http://www.ers.usda.gov/briefing/foodsecurity/stats_graphs.htm#food_secure

USDA. (2012a). Supplemental Nutrition Assistance Program: Average Monthly Benefit Per Household.
USDA. (2012b). WIC Program: Average Monthly Benefit Per Person.
Wehler, C., Weinreb, L. F., Huntington, N., Scott, R., Hosmer, D., Fletcher, K., . . . Gundersen, C. (2004). Risk and protective factors for adult and child hunger among low-income housed and homeless female-headed families. *Am J Public Health, 94*(1), 109-115.
Weiss, I., Ettinger de Cuba, S, Chilton, M, Schiffmiller, A, Cook, J, Pasquariello, J, Coleman, S & Cahill, RM. (2012). Stable, Affordable Housing Supports Young Children's Health in Philadelphia. Boston, MA: Children's HealthWatch.

Appendix A

# City of Philadelphia
# Hunger-Free Hospitals

Recognizing the unique role that hospitals play in improving the health and welfare of their patients and the continuing challenges we as a city face in addressing hunger among our residents, the Mayor's office, the City Health Department, and the Drexel School of Public Health's Center for Hunger-Free Communities is looking to partner with area hospitals on an effort called "Hunger-Free Hospitals." This program is designed to work with hospitals to screen patients for food insecurity and connect those patients that screen positive to critical resources that will enable them to feed themselves and their family. Participating hospitals would get a special designation from the City of Philadelphia recognizing them as a "Hunger-Free Hospital", and as a valuable partner in the fight to end food insecurity in Philadelphia.

Below is more detailed information on the program.

**Hunger-Free Hospital Program**

*Screening Process*

One of the key elements of the program is to have a food insecurity screening occur at during all pediatric visits or visits to the emergency room at the hospital, and to capture that information on the patient's medical record.

The food insecurity screening consists of a 2-item questionnaire. Hospital staff would ask the patient or their caregiver the following questions:

1. In the last 12 months, we worried whether our food would run out before we got money to buy more.
2. In the last 12 months, the food we bought didn't last and we didn't have money to get more.

Patients or caregivers would answer if these two questions apply to them all of the time (always true), some of the time (sometimes true) or never (never true). On either question, an answer of always true or sometimes true would indicate a positive food insecurity screening. The screening may be performed by nurses, medical assistants, doctors, or other hospital staff. A positive food insecurity screening would be recorded in the patient's medical record (preferably in their electronic medical record). If they say "yes" to either question, a follow-up question regarding their participation in SNAP, WIC and school breakfast and lunch would be asked to help guide how the professional can connect patients to resources.

*Connecting Patients to Resources*

For those who screen positive, the staff person would also ask the patient for permission to share the data they obtained from the screening with other organizations that can help address their food insecurity, such as nearby pantries and organizations that will assist with enrollment in food stamps (SNAP). The doctor or medical assistant would also give them with a pamphlet that would provide information on how to access resources to get food.

*Data Collection and Tracking*
The information collected through this food insecurity screening would be tracked in the patient's electronic medical record in order to keep their doctor informed about this ongoing health risk. In addition, the data assembled from a composite of all families who provide consent would be shared with the hospital and the City to help us better understand of the scope of the problem and the effectiveness of the program in connecting patients with resources and curbing food insecurity.

*Connecting Patients to Resources*
Once patients screen positive for food insecurity, hospital staff will direct them to a nearby food pantry where they can go to get immediate help. In addition, we want to ensure that all patients that are eligible for food stamps (SNAP) are successfully enrolled in the program.

The resources sheet will include information for the Coalition against Hunger's food stamp hotline, which is designed to help local residents navigate the sometimes complicated process of enrolling in the SNAP program. In addition, we want to work hospitals to create a mechanism this will involve a follow up call from a hospital social worker or third party organization to screen for eligibility and help eligible patients to enroll in food stamps. One way this could be accomplished is to integrate screening for SNAP and WIC as a routine part of the financial services provided to hospital patients. When hospital staff completes Medicaid applications, it could SNAP information to the benefits application. In addition, the Coalition against Hunger and the Benefits Data Trust (BDT) are interested in providing outreach support to this program with support from the partnering hospital.

*Other Resources for Hospitals to Combat Hunger*
We are also looking for additional ways to collaborate with hospitals to address food insecurity and encourage healthy eating. Here are few possible suggestions:

- Healthy Food Carts – Through the City of Philadelphia's Get Fit Philly program, healthy carts are mobile food carts that sell fruits and vegetables in low-income Philadelphia communities. Carts receive free small business training, licensing fee waivers, marketing assistance, and Electronic Benefit Transfer (EBT) machines. A healthy food cart could be located inside the hospital for patients to take advantage of.
- Set up collection bins for food donations for nearby pantries at the hospital.
- Open a food pantry inside the hospital.
- Provide discounted food at the hospital cafeteria for patients that screen positive for food insecurity.

We are eager to work with hospitals to think through the feasibility of these and other ideas to address food insecurity among their patients.

*Ongoing Monitoring*
In order to ensure the efficacy of the "Hunger-Free Hospital" designation, the City of Philadelphia will monitor the outcomes of the program with support from the Center for Hunger-Free Communities. As a monitor, Drexel will provide the following to the City and the hospital:

- Quarterly updates on how many people were asked about their food security status, how many were screened positive for food insecurity, how many agreed to have their information shared with a third-party benefits organization, how many patients were called by hospital or a data referral agency, how many were enrolled in SNAP and/or WIC, and for those not enrolled, aggregate information for why they were not enrolled.
- Bi-annual updates on the food insecurity rates for patients of participating hospitals broken out by hospital.

This will help us to work with the hospital to improve the program and the outcomes for their patients. In addition, it will provide an important service to the City to help monitor rates of food insecurity and hospital efforts to treat and prevent food insecurity.

**Timeline**
We hope to launch the first round of designations in Spring 2012. Once we have 3 months of data, we work to expand it to other hospitals in the area.

We look forward to discussing this partnership with you, and working with your organization to continue to fight hunger among your patients and across Philadelphia.

Appendix B

*City of Philadelphia*
*Hunger-Free Hospital*

# *Agenda*
# *March 1, 2012*

## Updates

a. St. Chris Administrative Leadership Buy-In
b. Potential strategies to connect patients to emergency food
c. Data sharing agreement
d. Connecting to SNAP enrollment
e. Other updates

## Next Steps

Appendix C

**M E M O R A N D U M**

TO: Mary Horstmann
CC:
FROM: Cynthia Chen
RE: "Flagship" Food Pantry in West Philadelphia
DATE: January 10, 2012

After speaking with Colleen Watts, the Manager of the Agency Network at Philabundance, she advised me to visit their two premier "flag ship" food pantries in Philadelphia. "Flagship" sites were designated to pantries based on assessments performed by Philabundance on several criteria, including amount of food provided, number of days the pantry is open, number of families the pantry supports, and other specified guidelines. The two "flagship" food pantries in central Philadelphia were located at:

Broad Street Ministry (South Philadelphia)
315 South Broad Street
Philadelphia, PA 19107

Grace Lutheran Church (West Philadelphia)
3529 Haverford Ave
Philadelphia, PA 19104

The main contact person who is running the food pantry at the West Philadelphia location is Linda Baldi. Her phone number is (215) 222-3570. The food pantry is open on Monday-Wednesday 10-1:30pm for emergency food pickups. All recipients need referrals from an outside entity, whether it is a hospital or social worker. Recipients may pick up 3-4 days of food based on the number of people for which he/she is responsible. The food pantry follows a formula for the type and amount of food given to each family, based on the calculated needs of the family. For example, a family that has young children may have different needs when compared to a family that has a teenager. Under the "hunger-free hospital" project, the church asks that the doctor's "prescription" contain the number of children in the family, the number of adults in the family, and the number of days for which the family can pick up food. For example, a prescription may say "2 children, 2 adults for 3 days." If families need to pick up food during a day or time when the food pantry is closed, Linda suggests calling her directly since she is usually on-site working after hours. Families may only use the emergency food service one time per month.
In order to pick up bags of emergency food, the pantry requests an ID from one adult (the same name on the prescription), the doctor's prescription, and a cart for carrying the food. Although the food is already packaged and placed in grocery bags, they may be numerous and heavy to carry. Finally, the patient is asked to fill out a form when they arrive at the pantry.
The food pantry is also open every Thursday at 9am and provides fresh fruits and vegetables on these occasions. The food is laid out and offered on a first come-first served basis. Recipients simply pick out the foods that they find appealing. Patients may come every Thursday to attain fresh fruits and vegetables.

The food pantry offers a variety of foods including, frozen meats, canned vegetables, peanut butter, jelly, dry pasta, tomato sauce, canned fruits, canned soup, cereal, tea, coffee, sugar, etc. The church also provides clothing and appliances for families as needed.
This pantry is about a 10 minute walk from the CHOP main hospital. As long as patients may get to the site, they can pick up food. However, the pantry does not deliver. The pantry currently served around 200-225 families per week and has the capacity to serve even more families if needed. The church has a staff of 17 people, consisting of paid workers and volunteers. The site receives food from Philabundance and sister churches, and also receives consistent monetary support from outside organizations and churches. The church purchases additional food mid-week if necessary and has not run out of food to provide to people since the pantry first began years ago.

Appendix D

# Meeting Minutes

**Call to order:**
An initial meeting with the Health Commissioner, Donald Schwarz, Center for Hunger-Free Communities, Children's Hospital of Pennsylvania and the Office of the Mayor, was held in the Municipal Services Building on February 23, 2012 at 10:00am.

**Members in attendance:**
Donald Schwarz, Health Commissioner, Deputy Mayor for Health and Opportunity
Lou Bell, Pediatrician, CHOP, Medical Director, Pediatric Research Consortium
Peter Grollman, VP of Governmental Affairs, CHOP
Saba Khan, Pediatrician, CHOP
Jim Massey, RN, Director of Pediatric Research Consortium
Robert Grundmeiser, MD, Director, Clinical Informatics
Sara Dziedzic, Social Worker, CHOP
Mary Horstmann, Deputy Director, Office of Policy Planning and Coordination
Mariana Chilton, Principal Investigator and Director, Center for Hunger-Free Communities
Cynthia Chen, MPH student, Drexel University

**Announcements:**

- The Health Commissioner wanted to notify everyone that children can receive free meals at Recreational centers.
    - Meals are paid for by the USDA
    - Children do not have to be enrolled in school programs.
    - 1,200 children currently take advantage of this program, but the city is aiming to feed around 3,000 children.
- The data collected show that the school district offers better, more nutritious foods.
    - Children's nutritional intake in charter schools is a greater concern, because the data is not centralized.
- Information about CHOP's food insecurity screening.
    - Screening will not be done cohesively, only at the 4 designated clinics.
    - Only done at 3 year visits.
    - Research may eventually focus on poor health outcomes and obesity.
    - Will provide a food resource packet, designed by residents.
    - Provided a flowchart of what will occur during and after screenings.
- The Health Commissioner was wondering why CHOP had to submit an IRB. He wondered whether CHOP was participating in a study, or conducting a policy change.
    - An institutional change will occur that will alter the cultural habits of the doctors.
    - CHOP needs IRB because they will be using data collected from the screenings to determine whether they should pursue "hunger-free hospitals" and to analyze other health information.
- The Health Commissioner asked whether families would be provided with education on how to best spend their SNAP money, once they do receive it.
    - SNAP and WIC do provide nutrition education.

    - Studies have shown that families on SNAP eat more fruits and vegetables than families who are not receiving SNAP.
- CHOP is trying to teach urban families how to cook and in the process of trying to get kitchens built for their clinics.
- There is a lack of culturally appropriate foods and preparation methods in many neighborhoods.
- Physicians at CHOP need to promote the 3 year visit.
    - The 4 CHOP clinics will see around 1,000 children per year. What percentage will actually attend their 3 year visit?
    - Can promote the 3 year visit with families in need.
    - Uninsured families with children are ineligible for SNAP and need to be addressed.
    - Increase visits through family interventions with siblings who are around 3 years old.
        - Children usually fall off WIC around 3 years old.
        - There are more children on SNAP, than WIC.
        - Immigrant families are usually on WIC, rather than SNAP.
        - Cooperation between the federal and state.
            - Maybe USDA could somehow refer families who are on SNAP to WIC and vice versa.
- CHOP could screen earlier or after the 3 year visit to find out whether families are still food insecure to ensure that "hunger-free hospitals" is working to decrease food insecurity.
- City has mapped food deserts to develop strategies on addressing each area.
    - There are no good business models for providing food (Farmer's Markets, Food Trucks, etc.) to isolated areas.
    - Isolated areas have limited transportation and/or corner stores.
    - The City can subsidize smaller scale fresh produce sales, such as food carts.
    - Model works well for carts located in high SNAP traffic areas.
    - Food Trust tracks SNAP recovery dollars to ensure that the money is being spent on healthy food items.
    - Regulatory mechanism
        - Food must be of high quality, or the City can defund the cart.
- Discussions about opening a WIC center at CHOP have not occurred.
- The Health Commissioner suggested contacting Jamie Oliver to attain help with setting up a demo kitchen in the clinics.
- The Health Commissioner suggested growing a community garden as a means of supplementing the foods being distributed or sold at the Food Carts or Famer's Markets.
    - CHOP currently has a community garden at the Seashore House.

- SHARE could be a resource in providing and delivering food for an on-site food pantry.
- Families can grow food in community gardens, which are sponsored by the Horticultural Society. Families can take whatever food they need and give the rest to the Horticultural Society.
    - There is limited input by outside parties, because the families and communities will maintain the garden.
    - Horticultural Society can work with the community to distribute the food to CHOP patients.

**Next Steps:**

- Mary will connect Food Trust with CHOP for further discussion about setting up a food cart.

Appendix E

# Resources for Feeding Your Family

## If you need food NOW

**Food Help Line** (operated by Philabundance)
Call **800-319-FOOD (3663),** Mon-Fri, 8:30am-4:30pm
Provides an Emergency Food Box available for pick-up throughout Philadelphia

**Emergency Food and Formula (EFF) Program** (Operated by the Madeira Family Center)
Call **215-765-3874,** Mon-Fri, 11am - 3pm
Provides an Emergency Food package which includes 3 days of food, consistently stocks infant formula

**Food Pantries**
Visit these food pantries in your area:

Broad Street Ministry (South Philadelphia)
315 South Broad Street
Philadelphia, PA 19107
**215- 735-4847**, call to schedule a designated time to shop at the food pantry market
Provides free meals on Thursdays to people who are homeless and Sundays to families

Grace Lutheran Church (West Philadelphia)
3529 Haverford Ave
Philadelphia, PA 19104
Provide fresh fruits and vegetables every Thursday at 9am
Provides Emergency Food package, must be referred by another agency

Use the enclosed gift card to ___ at ____.

## To help your family have enough food EVERY DAY

**Supplemental Nutrition Assistance Program (SNAP)**
Call **800-221-5689**, open 24 hours per day, 7 days per week

**Greater Philadelphia Coalition Against Hunger**
Call **215-430-0555**, Mon-Fri, 9am-5pm

**Women Infants Children (WIC)**
Call **800-743-3300**, Mon-Fri, 8am-5pm

**Summer Meal Program** (Operated by Nutritional development services, Archdiocese of Philadelphia (877-730-5200)
Call **311** and a representative at City Hall will direct you to a nearby location based on your zip code.

**School Lunch Program**
If you do not receive SNAP benefits, **apply for school lunch at** https://www.humanservices.state.pa.us/Compass.Web/CMHOM.aspx. If you receive SNAP benefits you are already eligible.

## Other food resources

**Fresh for All**
Go to **Front and Tasker Streets**, Fri 1:30-2:30pm
And/or **49th and Spruce Streets**, Wed 2-3pm

Provides free fresh produce to any family, year-round when temperature >32 degrees; bring bags/boxes to carry your food

**SHARE Food Program**
2901 West Hunting Park Avenue
Philadelphia, PA 19129
**215-223-2220**
For each package of food purchased, SHARE asks that 2 hours of community service be provided whether at SHARE, other institutions in your community, or your own neighborhood.

Once you have SNAP benefits

**Double Dollars** (Fair Food **215-386-5211**)
Sign up at the **Fair Food Farmstand**, Reading Terminal Market, 12th & Arch Streets, Mon-Sat 8am-6pm, Sun 9am-5pm
Provides extra $5 coupons to spend at the Farmstand

**Philly Food Bucks (The Food Trust 215-575-0444)**
Use SNAP Access Card at **local Farmers' Markets,**
Provides extra $2 Philly Food Bucks to spend at local Farmers' Markets

Once you have WIC benefits

**Farmers' Market Nutrition Program (FMNP)**
Contact your WIC staff representative to be enrolled in the program
Provides $20 in checks to spend at local Farmers' Markets

Appendix F

BENEFITS DATA TRUST

## FOOD INSECURITY PROJECT (CHOP, JEFF, ST. CHRIS)

**PROJECT TIMELINE:** 36 months
**Start Up:** 6 months
**Implementation:** 27 months
**Wrap Up:** 3 months

| | TOTAL | Year 1 | | Year 2 | Year 3 |
|---|---|---|---|---|---|
| Months | 36 | 6 Start Up | 6 Implementation | 12 Implementation | 12 Imp / Wrap Up |
| **Personnel - Management** | | | | | |
| Personnel | $ 313,391.00 | $ 32,794.00 | $ 56,119.00 | $ 112,239.00 | $ 112,239.00 |
| Fringe Benefits (payroll taxes, benefits..) | $ 62,678.20 | $ 6,558.80 | $ 11,223.80 | $ 22,447.80 | $ 22,447.80 |
| Professional Fees / Consultants | $ 8,640.00 | $ 1,440.00 | $ 1,440.00 | $ 2,880.00 | $ 2,880.00 |
| **Subtotal Personnel** | **$ 384,709** | **$ 40,792.80** | **$ 68,782.80** | **$ 137,566.80** | **$ 137,566.80** |
| **Other Direct Expenses** | | | | | |
| Marketing: Printing & Copying | $ 15,337.91 | $ - | $ 3,067.58 | $ 6,135.17 | $ 6,135.17 |
| Marketing: Program Supplies | $ 1,000.00 | $ - | $ 200.00 | $ 400.00 | $ 400.00 |
| Marketing: Postage & Delivery (Permits) | $ 24,784.09 | $ - | $ 4,956.82 | $ 9,913.64 | $ 9,913.64 |
| Technology: Telephone / Internet | $ 60,624.00 | $ - | $ 12,124.80 | $ 24,249.60 | $ 24,249.60 |
| Technology: Equipment | $ 3,600.00 | $ 600.00 | $ 600.00 | $ 1,200.00 | $ 1,200.00 |
| Travel & Meetings | $ 560.00 | $ 93.33 | $ 93.33 | $ 186.67 | $ 186.67 |
| Office Supplies | $ 864.00 | $ 144.00 | $ 144.00 | $ 288.00 | $ 288.00 |
| Space Costs (rent / utilities / maintenance) | $ 30,528.00 | $ 5,088.00 | $ 5,088.00 | $ 10,176.00 | $ 10,176.00 |
| **Subtotal Other Direct Expenses** | **$ 137,298.01** | **$ 5,925.33** | **$ 26,274.53** | **$ 52,549.07** | **$ 52,549.07** |
| **TOTAL** | **$ 522,567.21** | **$ 46,718.13** | **$ 95,150.67** | **$ 190,302.54** | **$ 190,302.54** |
| Per Application Cost* | $ 69.60 | | | | |

* based on 7,250 applications

Appendix G

**Patient Estimations at CHOP (based on 2011 outpatient numbers in network)**

818, 609 (round to 800,000) outpatients in whole network
160,000 patients screened positive for FI (20%[1] of screened)
48,000 to 64,000 patients will not have SNAP (30-40%[2] will not have SNAP)

if there are 48,000 patients w/out SNAP and the referral agency calls patients
24,000 to 33,600 patients will ask for help (50-70%[3] of patients wants help)
**4,800 to 14,400 SNAP connections (20-60%[4] success rate from 24,000 patients)**
**6,720 to 20,160 SNAP connections (20-60% success rate from 33,600 patients)**

if there are 48,000 patients w/out SNAP and the patient calls the referral agency
12,000 to 24,000 patients will ask for help (25-50%[5] of patients wants help)
**2,400 to 7,200 SNAP connections (20-60% success rate from 12,000 patients)**
**4,800 to 14,400 SNAP connections (20-60% success rate from 24,000 patients)**

if there are 64,000 patients w/out SNAP and the referral agency calls patients
32,000 to 44,800 patients will ask for help (50-70% patients wants help)
**6,400 to 19,200 SNAP connections (20-60% success rate from 32,000 patients)**
**8,960 to 26,880 SNAP connections (20-60% success rate from 44,800 patients)**

if there are 64,000 patients w/out SNAP and the patient calls the referral agency
16,000 to 32,000 patients will ask for help (25-50% of patients want help)
**3,200 to 9,600 SNAP connections (20-60% success rate from 16,000 patients)**
**6,400 to 19,200 SNAP connections (20-60% success rate from 32,000 patients)**

---

[1] 20% of all patients screened were estimated to be food insecure. This percentage was determined from the estimated percentages found in preliminary data reported by St. Christopher's Hospital.
[2] 30-40% of patients who positively screened for FI will not have SNAP. This percentage was determined based on the experience of Rachel Cahill, a policy analyst at the Center for Hunger-Free Communities at Drexel University.
[3] 50-70% of patients are estimated to want help if they are being called by the referral agency. This percentage was estimated by Rachel Cahill.
[4] 20-60% of referred patients will be successfully connected to SNAP depending on the data referral agency used. Benefits Data Trust has a history of 20% successful SNAP connection rate, while Coalition Against Hunger has a 60% successful SNAP connection rate. These percentages were determined and estimated by Rachel Cahill.
[5] 25-50% of patients are estimated to actually call the referral agency themselves if referred. This percentage was estimated by Rachel Cahill.

**Patient Estimations at St. Christopher's Hospital (based on 2011 outpatient numbers in hospital only)**

121,180 outpatients at hospital
24,236 screened positive (20% of screened)
7,270 to 9,694 patients will not have SNAP (30-40% will not have SNAP)

if there are 7,270 patients w/out SNAP and referral agency calls patient

3,635 to 5,089 patients will ask for help (50-70% of patients wants help)

**727 to 2,181 SNAP connections (20-60% success rate from 3,635 patients)**

**1,017 to 3,053 SNAP connections (20-60% success rate from 5,089 patients)**

if there are 7,270 patients w/out SNAP and patient calls referral agency

1,817 to 3,635 patients will ask for help (25-50% of patients wants help)

**363 to 1,090 SNAP connections (20-60% success rate from 1,817 patients)**

**727 to 2,181 SNAP connections (20-60% success rate from 3,635 patients)**

if there are 9,694 patients w/out SNAP and referral agency calls patient

4,847 to 6,785 patients will ask for help (50-70% patients wants help)

**969 to 2,908 SNAP connections (20-60% success rate from 4,847 patients)**

**1,357 to 4,071 SNAP connections (20-60% success rate from 6,785 patients)**

if there are 9,694 patients w/out SNAP and patient calls referral

2,423 to 4,847 patients will ask for help (25-50% of patients want help)

**484 to 1,453 SNAP connections (20-60% success rate from 2,423 patients)**

**969 to 2,90**

**8 SNAP connections (20-60% success rate from 4,847 patients)**

**Patient Estimations at St. Christopher's Hospital (based on 2011 outpatient numbers in network)**

409,897 total outpatients
81,979 screened positive (20% of screened)
24,593 to 32,791 patients will not have SNAP (30-40% will not have SNAP)

if there are 24,593 patients w/out SNAP and referral agency call patient

12,296 to 17,215 patients will ask for help (50-70% of patients wants help)

**2,459 to 7,377 SNAP connections (20-60% success rate from 12,296 patients)**

**3,443 to 10,329 SNAP connections (20-60% success rate from 17,215 patients)**

if there are 24,593 patients w/out SNAP and patient calls referral agency

6,148 to 12,296 patients will ask for help (25-50% of patients wants help)

**1,229 to 3,688 SNAP connections (20-60% success rate from 6,148 patients)**

**2,459 to 7,377 SNAP connections (20-60% success rate from 12,296 patients)**

if there are 32,791 patients w/out SNAP and referral agency calls patient

16,395 to 22,953 patients will ask for help (50-70% patients wants help)

**3,279 to 9,837 SNAP connections (20-60% success rate from 16,395 patients)**

**4,590 to 13,771 SNAP connections (20-60% success rate from 22,953 patients)**

if there are 32,791 patients w/out SNAP and patient calls referral agency

8,197 to 16,395 patients will ask for help (25-50% of patients want help)

**1,639 to 4,918 SNAP connections (20-60% success rate from 8,197 patients)**

**3,279 to 9,837 SNAP connections (20-60% success rate from 16,395 patients)**

Appendix H

**Written Food Insecurity Screening**

| | |
|---|---|
| Clinic Site Name:<br>Pediatrics Family Med | Age of patient: |
| Male Female | Height: Weight: |
| Insurance type: ____self ____Medicaid ____private | |
| 1. Over the past 12 months did you worry whether your food would run out before you could get money to buy more.<br>____ Often True<br>____ Sometimes True<br>____ Never True | |
| 2. Over the past 12 months, did the food you bought just not last and you didn't have money to get more.<br>____ Often True<br>____ Sometimes True<br>____ Never True | |
| 3. Do you receive food stamps? | Yes No |
| 4. Do you receive WIC? | Yes No |
| Comments: | |

- 0-4 point scale for questions #1,2

0 = never true
1= sometimes true
2=often true